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**PART 6      Answer**

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This passage is excerpted from Marcus Eriksen's "Plastic Pollution in the World's Oceans: More Than 5 Trillion Plastic Pieces Weighing Over 250,000 Tons Afloat at Sea," ©2014.

Plastic pollution is globally distributed across all oceans due to its properties of buoyancy and durability, and the absorption of toxicants by plastic while traveling through the environment has led some researchers to claim that synthetic polymers in the ocean should be regarded as hazardous waste. Through photodegradation and other weathering processes, plastics fragment and disperse in the ocean, converging in the subtropical gyres.\* Accumulation of plastic pollution also occurs in closed bays, gulfs and seas surrounded by densely populated coastlines and watersheds.

Despite oceanographic model predictions of where debris might converge, estimates of regional and global abundance and weight of floating plastics have been limited to microplastics less than 5 mm. Using extensive published and new data, particularly from the Southern Hemisphere subtropical gyres and marine areas adjacent to populated regions corrected for wind-driven vertical mixing, we populated an oceanographic model of debris distribution to estimate global distribution and count and weight densities of plastic pollution in all sampled size classes.

Plastics of all sizes were found in all ocean regions, converging in accumulation zones in the subtropical gyres, including southern hemisphere gyres where coastal population density is much lower than in the northern hemisphere. While this shows that plastic pollution has spread throughout all the world's oceans, the comparison of size classes and weight relationships suggests that during fragmentation plastics are lost from the sea surface.

The observations that there is much less microplastic at the sea surface than might be expected suggests that removal processes are at play. These include UV degradation, biodegradation, ingestion by organisms, decreased buoyancy due to fouling organisms, entrainment in settling detritus, and beaching. Fragmentation rates of already brittle microplastics may be very high, rapidly breaking small microplastics further down into ever smaller particles, making them unavailable for our nets (0.33 mm mesh opening). Many recent studies also demonstrate that many more organisms ingest small plastic particles than previously thought, either directly or indirectly, i.e. via their prey organisms.

\*In oceanography, a "gyre" refers to a large system of rotating ocean currents.

1

According to the passage, ocean plastics are found in greatest quantities in

- A) subtropical regions.
- B) densely populated areas.
- C) areas that are not affected by UV radiation.
- D) coastal regions.

2

The main contrast that the author draws between this study and previous studies of plastic pollution is that this study

- A) used samples of plastic pollution from all over the world.
- B) explored the physical processes involved in plastic degradation.
- C) estimated the distribution of larger classes of plastics.
- D) focused on plastic accumulation in subtropical regions of the globe.

3

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

- A) lines 8–10 ("Accumulation . . . watershed")
- B) lines 11–14("Despite . . . 5 mm")
- C) lines 29–31 ("The . . . play")
- D) lines 37–40 ("Many . . . organisms")

4

In describing the distribution of ocean plastics, the author relies primarily on what type of evidence?

- A) Personal narratives
- B) Historical trends
- C) Data synthesis
- D) Expert opinions

5

Which of the following statements most weakens the author's conclusion that there are fewer microplastics than expected on the sea surface?

- A) Plastics of all sizes were found on the ocean's surface.
- B) Large plastics tend to fragment due to natural processes such as biodegradation.
- C) Some plastics were likely ingested by organisms.
- D) The nets used in the study were unable to capture plastics smaller than 0.33 mm.

Passage 1 is excerpted from Michael Thackeray's "The Long, Winding Road to Advanced Batteries for Electric Cars," published in 2012. Passage 2 is excerpted from Julie Chao's "Goodbye, Range Anxiety? Electric Vehicles May Be More Useful Than Previously Thought," published in 2015.

### Passage 1

Batteries have come a long way since Alessandro Volta first discovered in 1800 that two unlike metals, when separated by an acidic solution, could produce an electric current. In their evolution, batteries have taken on various forms, ranging from lead-acid, to nickel-metal hydride, to current-day lithium-ion.

Now, technological advances in batteries are more critical than ever. Coupled with the alarming rate at which we are exploiting fossil fuels, the world's growing energy demand necessitates that we find alternative energy sources.

With present-day technology, however, electric vehicles cannot compete with internal combustion vehicles. According to [one] review, "energy densities two and five times greater are required to meet the performance goals of a future generation of plug-in hybrid-electric vehicles (PHEVs) with a 40-80 mile all-electric range, and all-electric vehicles (EVs) with a 300-400 mile range, respectively." To make the leap, scientists will have to find new couplings of battery materials.

Still, researchers are hopeful of a breakthrough. They can now use computing to accelerate the discovery of new electrode and electrolyte systems. This creates a positive feedback loop in which computing informs experiments, and experimental results help refine the computing process. This high-throughput iterative process may be scientists' ultimate hope for discovering materials that can significantly improve the electrochemical performance, safety and cost of batteries.

### Passage 2

With today's electric vehicle (EV) batteries, "end of life" is commonly defined as when the storage capacity drops down to 70 to 80 percent of the original capacity. As capacity fades, the vehicle's range decreases. Berkeley researchers decided to investigate the extent to which vehicles still meet the needs of drivers beyond this common battery retirement threshold.

The Berkeley scientists analyzed power capacity fade, or the declining ability of the battery to deliver power, such as when accelerating on a freeway onramp, as it ages. They modeled the impact of power fade on a vehicle's ability to accelerate as well as to climb steep hills and complete other drive cycles. They found that power fade for the chosen vehicle [a Nissan Leaf] does not have a significant impact on an EV's performance, and that a battery's retirement will be driven by energy capacity fade rather than by power fade.

The researchers thus conclude that "range anxiety may be an over-stated concern" since EVs can meet the daily travel needs of more than 85 percent of U.S. drivers even after losing 20 percent of their originally rated battery capacity. They also conclude that batteries can "satisfy daily mobility requirements for the full lifetime of an electric vehicle."

1

Which situation is most similar to the "positive feedback loop" (lines 22–23) described in Passage 1?

- A) A professional tennis player wins a tournament, which then qualifies him for additional tournaments.
- B) An online advertising firm sends advertisements to an online customer, and the customer's choices inform which advertisements are sent to her in the future.
- C) A thermostat turns on the heat when the temperature drops to a certain temperature, and then turns off the heat when the temperature rises to a certain temperature.
- D) A truck driver swerves to avoid a pothole. Seeing this, the driver of the car behind the truck avoids the same pothole.

2

In Passage 2, one weakness of the Berkeley study is that the researchers

- A) focused on power fade instead of energy capacity fade.
- B) looked at battery performance beyond the "end of life" threshold.
- C) used one type of electric vehicle to generalize about all electric vehicles.
- D) relied only on U.S. drivers.

3

The researchers described in Passage 2 rely primarily on which type of evidence?

- A) Experimental data
- B) Literature reviews
- C) Expert testimonies
- D) Customer feedback

4

The authors of both passages would likely agree that

- A) humans need to stop using fossil fuels as an energy source.
- B) researching the performance of electric car batteries is a worthwhile endeavor.
- C) the travel needs of U.S. drivers are likely greater than anticipated.
- D) electric cars will soon become more popular than internal combustion vehicles.

5

How would the researchers described in Passage 2 likely respond to the review quoted in the third paragraph of Passage 1 (lines 11–19)?

- A) They would argue that it is likely impossible to meet the performance needs of future electric car vehicles.
- B) They would claim that most electric car drivers need batteries that can last for more than 400 miles.
- C) They would agree that electric car batteries do not currently meet the needs of most U.S. drivers.
- D) They would assert that electric vehicles likely have performance ranges greater than initially thought.

This passage is excerpted from John P. A. Ioannidis, "Scientific Research Needs an Overhaul," ©2014 by Scientific American.

Earlier this year a series of papers in The Lancet reported that 85 percent of the \$265 billion spent each year on medical research is wasted. This is not because of fraud, although it is true that retractions are on the rise. Instead, it is because too often absolutely nothing happens after initial results of a study are published. No follow-up investigations ensue to replicate or expand on a discovery. No one uses the findings to build new technologies.

The problem is not just what happens after publication—scientists often have trouble choosing the right questions and properly designing studies to answer them. Too many neuroscience studies test too few subjects to arrive at firm conclusions. Researchers publish reports on hundreds of treatments for diseases that work in animal models but not in humans. Drug companies find themselves unable to reproduce promising drug targets published by the best academic institutions. The growing recognition that something has gone awry in the laboratory has led to calls for, as one might guess, more research on research (aka, meta-research)—attempts to find protocols that ensure that peer-reviewed studies are, in fact, valid.

It will take a concerted effort by scientists and other stakeholders to fix this problem. We need to identify and correct system-level flaws that too often lead us astray. This is exactly the goal of a new center at Stanford University (the Meta-Research Innovation Center at Stanford), which will seek to study research practices and how these can be optimized. It will examine the best means of designing research protocols and agendas to ensure that the results are not dead ends but rather that they pave a path forward.

The center will do so by exploring what are the best ways to make scientific investigation more reliable and efficient. For example, there is a lot of interest on collaborative team science, study registration, stronger study designs and statistical tools, and better peer review, along with making scientific data, analyses and protocols widely available so that others can replicate experiments, thereby fostering trust in the conclusions of those studies. Reproducing other scientists' analyses or replicating their results has too often in the past been looked down on with a kind of "me-too" derision that would waste resources—but often they may help avoid false leads that would have been even more wasteful.

The Priorities of Major Stakeholders in Scientific Research

	Publishable	Fundable	Translatable	Profitable
Scientists	+++	+++	+	
Drug companies				+++
Not-for-profit funders / philanthropists	++		+++	
Journal editors	+++			+
Universities	+	+++		+
Not-for-profit research institutions	+++	+++	+	+

This table highlights the priorities of major stakeholders in scientific research. One "+" is the lowest non-zero score and three "+++" is the highest non-zero score.

Adapted from John P. A. Ioannidis, "Scientific Research Needs an Overhaul," ©2014.

1

The main purpose of the passage is to

- A) argue that scientific studies need to be more efficient.
- B) describe the results of a scientific study.
- C) explain the history of scientific inquiry.
- D) highlight the fraudulent nature of many research studies.

2

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

- A) an explanation of a phenomenon to a narrative illustrating this phenomenon.
- B) the identification of a problem to a proposal for solving this problem.
- C) a prediction for the future to an explanation underlying this prediction.
- D) the introduction of an argument to a counterclaim refuting this argument.

3

Which of the following situations is most similar to the research problems described in paragraph 2?

- A) A high school has to cut its music and arts programs due to a decrease in government funding.
- B) A patient continues to get sicker because she does not abide by her physician's recommendations.
- C) A governmental body is unable to come to a consensus about the budget for the upcoming year.
- D) A marketing firm tests a website with participants that are not representative of the target population.

4

In the final paragraph, which of the following counterarguments regarding experiment replication does the author anticipate?

- A) That it often results in contradictory outcomes
- B) That it is unoriginal and therefore not worthwhile
- C) That it is difficult to fund
- D) That it is frequently unpublishable

5

According to the graph, what are the primary research priorities for drug companies and universities.

- A) Drug companies prioritize profitability; universities prioritize publishability.
- B) Drug companies prioritize fundability; universities prioritize translatability.
- C) Drug companies prioritize profitability; universities prioritize fundability.
- D) Both drug companies and universities prioritize profitability above fundability, publishability, and translatability.

This passage is adapted from Lan Chaplin and Michael Norton's "Why Don't You Want to Sing and Dance in Public?" © 2015 by Scientific American.

Picture two birthday parties: one for 4 year olds, and one for 14 year olds. The former conjures kids bellowing "Happy Birthday" and putting their left feet in during the "Hokey Pokey"; the second conjures slump-shouldered teens huddled in corners furtively glancing at each other—even as loud music blares in the background. Why the difference? Our research suggests that the process of kids losing the joy of singing and dancing is intricately linked to a crucial development in their understanding of other people.

We tested the link between the ability to understand the minds of observers and willingness to perform with a test of one hundred fifty-nine children ranging in age from 3 to 12 years old. We first gave each child four options in random order: sing a song of their choosing, perform a dance of their choosing, circle red shapes on a page, or color in a square. Children had to select two of the four options to complete in front of us—right then and there. The first two tasks were our performance tasks, made even more difficult by the fact that the singing and dancing had to be completed without any musical accompaniment. The second two tasks were our "control" tasks, which we made deliberately boring to see if older kids would still choose these over the terror of performance.

The differences between kids of different ages were surprising even to us. Whereas some 31% of 3-year olds chose to both sing and dance, not a single child aged 11 or 12 did. Or put another way, while just 6% of 3- and 4-year-olds chose to avoid both singing and dancing, nearly 75% of 11- and 12-year olds chose to avoid both.

Why such a change in preferences? We next measured children's awareness that others might be judging their performance, using a task that measures "Theory of Mind"—or our ability to understand that others have minds and opinions that differ from ours. . . [An] increase in Theory of Mind was strongly and negatively correlated with children's desire to sing and dance: the higher children scored on our Theory of Mind test—the more children understood that others can have a different opinion of their abilities—the more likely they are to refuse to perform. And this trend held among our youngest participants: 3- and 4- year olds with a more developed Theory of Mind were more likely to avoid singing and dancing.

Our data rule out a salient alternative explanation for our pattern of performance avoidance, one familiar to anyone interacting with socially awkward teens or tweens: as children enter puberty they experience a host of changes that decrease their desire to perform. However, our results show that the shift away from performance begins as early as age 4—years before children enter puberty—suggesting that these changes associated with puberty are unlikely to account for our results.

Percentage of Children Choosing Each Task and Theory of Mind



The graph above shows the percentage of children of various ages who chose to perform each of the four tasks. It also shows the average Theory of Mind for children at various ages.

Adapted from Lan Chaplin and Michael Norton's "Why Don't You Want to Sing and Dance in Public?" © 2015 by Scientific American.

1

In the first paragraph, the description of the two birthday parties serves mainly to

- A) illustrate a familiar social phenomenon.
- B) contradict the results of a scientific study.
- C) explore a common misconception.
- D) defend a controversial social practice.

2

Based on the passage, which statement about Theory of Mind and performance anxiety is most likely true?

- A) Theory of Mind and performance anxiety both begin at the onset of puberty.
- B) As Theory of Mind increases, performance anxiety decreases.
- C) Theory of Mind is a better predictor of performance anxiety than is a child's age alone.
- D) An increase in performance anxiety causes an immediate increase in Theory of Mind.

3

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

- A) lines 10–13 (“We . . . old.”)
- B) lines 25–27 (“Whereas . . . did.”)
- C) lines 30–34 (“We . . . ours.”)
- D) lines 39–42 (“And . . . dancing.”)

4

Which potential counterargument do the authors address in the final paragraph of the passage?

- A) Many older children still enjoy engaging in performance activities.
- B) Some younger children do not enjoy singing and dancing.
- C) Performance anxiety stems from changes that occur because of puberty.
- D) Theory of Mind does not develop until puberty, after many children begin to exhibit performance anxiety.

5

Which statement from the passage is best supported by the data presented in the graph?

- A) “Children had to select two of the four options to complete in front of us—right then and there.”
- B) “[W]hile just 6% of 3- and 4-year-olds chose to avoid both singing and dancing, nearly 75% of 11- and 12-year olds chose to avoid both.
- C) “The higher children scored on our Theory of Mind test—the more children understood that others can have a different opinion of their abilities—the more likely they are to refuse to perform.”
- D) “[A]s children enter puberty they experience a host of changes that decrease their desire to perform.”

Passage 1 is excerpted from John Locke's "Second Treatise of Government," first published in 1689. Passage 2 is excerpted from Pierre-Joseph Proudhon's "General Idea of the Revolution in the 19th Century," originally published in 1851.

Passage 1

Men being, as has been said, by nature, all free, equal, and independent, no one can be put out of this estate, and subjected to the political power of another, without his own consent. The only way whereby any one divests himself of his natural liberty, and puts on the bonds of civil society, is by agreeing with other men to join and unite into a community for their comfortable, safe, and peaceable living one amongst another, in a secure enjoyment of their properties, and a greater security against any, that are not of it. This any number of men may do, because it injures not the freedom of the rest; they are left as they were in the liberty of the state of nature. When any number of men have so consented to make one community or government, they are thereby presently incorporated, and make one body politic, wherein the majority have a right to act and conclude the rest.

For when any number of men have, by the consent of every individual, made a community, they have thereby made that community one body, with a power to act as one body, which is only by the will and determination of the majority: for that which acts any community, being only the consent of the individuals of it, and it being necessary to that which is one body to move one way; it is necessary the body should move that way whither the greater force carries it, which is the consent of the majority: or else it is impossible it should act or continue one body, one community, which the consent of every individual that united into it, agreed that it should; and so every one is bound by that consent to be concluded by the majority.

Passage 2

The Social Contract is the supreme act by which each citizen pledges to the association his love, his intelligence, his work, his services, his goods, in return for the affection, ideas, labor, products, services and goods of his fellows; the measure of the right of each being determined by the importance of his contributions, and the recovery that can be demanded in proportion to his deliveries.

Thus the social contract should include all citizens, with their interests and relations. — If a single man were excluded from the contract, if a single one of the interests upon which the members of the nation, intelligent, industrious, and sensible beings, are called upon to bargain, were omitted, the contract would be more or less relative or special, it would not be social.

The social contract should increase the well-being and liberty of every citizen. — If any one-sided conditions should slip in; if one part of the citizens should find themselves, by the contract, subordinated and exploited by the others, it would no longer be a contract; it would be a fraud, against which annulment might at any time be invoked justly.

1

The main idea of Passage 1 is that

- A) it is safer for people to live in a state of nature than to consent to live in a community.
- B) people who choose to become part of a community are subject to the will of the majority.
- C) minority opinions and majority opinions should be given equal consideration in community affairs.
- D) it is unrealistic to expect people to surrender their natural liberties when joining a community.

2

In Passage 1, the reference to "bonds" (line 5) mainly serves to

- A) insert a personal opinion into an otherwise objective discussion of social rights.
- B) suggest that all people must rely on one another in a state of nature.
- C) emphasize the point that one has to relinquish some freedom in order to join a community.
- D) call into question the idea that natural liberty exists.

3

Which statement best reflects the perspective of the author of Passage 2 on the dissolution of the social contract?

- A) The contract should never be dissolved under any circumstances.
- B) The contract should only be dissolved if every person is in favor of it.
- C) The contract should be dissolved if any people are being oppressed.
- D) The contract should be dissolved if a majority of the population agrees that it is the best course of action.

4

How do the authors of the two passages view the relationship between society and personal liberty?

- A) They both acknowledge that participation in society increases the liberties of every individual.
- B) They both agree that participation in society increases the liberties of a limited number of citizens.
- C) The author of Passage 1 believes that participation in society increases the liberties of those in the majority, while the author of Passage 2 believes that it does not increase liberties for anyone.
- D) The author of Passage 1 believes that participation in society decreases individuals' liberties, while the author of Passage 2 believes that it increases them.

5

The author of Passage 2 would most likely respond to the assertion in Passage 1 that it is necessary for a community to follow the "consent of the majority" (line 25) with

- A) agreement, because it is impossible for every member of a society to agree with one another.
- B) agreement, because some individuals in a society are more important than others.
- C) disagreement, because society must address the needs of every individual.
- D) disagreement, because some minority opinions may in fact be better than the majority opinion.

This passage is excerpted from President John F. Kennedy's inaugural address, given in 1961.

The world is very different now. For man holds in his mortal hands the power to abolish all forms of human poverty and all forms of human life. And yet the same revolutionary beliefs for which our forebears fought are still at issue around the globe. Let the word go forth from this time and place, to friend and foe alike, that the torch has been passed to a new generation of Americans—born in this century, tempered by war, disciplined by a hard and bitter peace, proud of our ancient heritage, and unwilling to witness or permit the slow undoing of those human rights to which this nation has always been committed, and to which we are committed today at home and around the world.

To those new states whom we welcome to the ranks of the free, we pledge our word that one form of colonial control shall not have passed away merely to be replaced by a far more iron tyranny. We shall not always expect to find them supporting our view. But we shall always hope to find them strongly supporting their own freedom—and to remember that, in the past, those who foolishly sought power by riding the back of the tiger ended up inside.

To those people in the huts and villages of half the globe struggling to break the bonds of mass misery, we pledge our best efforts to help them help themselves, for whatever period is required—not because we seek their votes, but because it is right. If a free society cannot help the many who are poor, it cannot save the few who are rich.

Finally, to those nations who would make themselves our adversary, we offer not a pledge but a request: that both sides begin anew the quest for peace, before the dark powers of destruction unleashed by science engulf all humanity in planned or accidental self-destruction.

So let us begin anew—remembering on both sides that civility is not a sign of weakness, and sincerity is always subject to proof. Let us never negotiate out of fear, but let us never fear to negotiate.

Let both sides, for the first time, formulate serious and precise proposals for the inspection and control of arms, and bring the absolute power to destroy other nations under the absolute control of all nations.

Let both sides seek to invoke the wonders of science instead of its terrors. Together let us explore the stars, conquer the deserts, eradicate disease, tap the ocean depths, and encourage the arts and commerce.

And, if a beachhead of cooperation may push back the jungle of suspicion, let both sides join in creating a new endeavor—not a new balance of power, but a new world of law—where the strong are just, and the weak secure, and the peace preserved.

All this will not be finished in the first one hundred days. Nor will it be finished in the first one thousand days; nor in the life of this Administration; nor even perhaps in our lifetime on this planet. But let us begin...

1

A central theme of the passage is that

- A) those nations that dedicate themselves to democracy will receive aid and support from the United States.
- B) cooperation among all nations is necessary to protect the future of humanity.
- C) the Founding Fathers of the United States would be proud of the country's progress over the last century.
- D) the United States should dedicate more resources to fighting tyranny around the world.

2

Kennedy's reference to "our forebears" (line 4) serves mainly to

- A) call into question the relevance of struggles faced by people under colonial rule.
- B) inspire a rebellion similar to that proposed by the American revolutionaries.
- C) connect contemporary struggles for freedom with the American colonists' fight for independence.
- D) highlight the importance of the next generation of Americans in the fight for freedom.

3

Kennedy indicates that the ability to monitor weapons should be

- A) given exclusively to the government of the United States.
- B) shared by the leaders of all nations.
- C) designated to a small group of international leaders.
- D) adopted by a newly created independent body.

4

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

- A) a description of the history of the United States to a proposal for improving the lives of its citizens.
- B) a commitment to helping allies of the United States to a call for better cooperation among opposing nations.
- C) an argument for improving the lives of people around the world to a recognition of that argument's weaknesses.
- D) an explanation of the foreign policies of the United States to an example illustrating these policies.

5

Which choice best summarizes Kennedy's perspective on scientific progress?

- A) The advancement of science should be a central priority for the United States.
- B) Scientific knowledge will inevitably improve the lives of people on this planet.
- C) Science has the potential to both improve and harm humanity.
- D) Investment in the sciences will enable humans to better understand how the universe works.

This passage is excerpted from Henry James, "Daisy Miller: A Study," originally published in 1879. The following scene describes the meeting of two Americans in a Swiss village.

"Our courier says they take you right up to the castle," the young girl continued. "We were going last week, but my mother gave out. She suffers dreadfully from dyspepsia. She said she couldn't go. Randolph wouldn't go either; he says he doesn't think much of old castles. But I guess we'll go this week, if we can get Randolph."

"Your brother is not interested in ancient monuments?" Winterbourne inquired, smiling.

"He says he don't care much about old castles. He's only nine. He wants to stay at the hotel. Mother's afraid to leave him alone, and the courier won't stay with him; so we haven't been to many places. But it will be too bad if we don't go up there." And Miss Miller pointed again at the Chateau de Chillon.

"I should think it might be arranged," said Winterbourne. "Couldn't you get someone to stay for the afternoon with Randolph?"

Miss Miller looked at him a moment, and then, very placidly, "I wish YOU would stay with him!" she said.

Winterbourne hesitated a moment. "I should much rather go to Chillon with you."

"With me?" asked the young girl with the same placidity. She didn't rise, blushing, as a young girl at Geneva would have done; and yet Winterbourne, conscious that he had been very bold, thought it possible she was offended. "With your mother," he answered very respectfully.

But it seemed that both his audacity and his respect were lost upon Miss Daisy Miller. "I guess my mother won't go, after all," she said. "She don't like to ride round in the afternoon. But did you really mean what you said just now—that you would like to go up there?"

"Most earnestly," Winterbourne declared.

"Then we may arrange it. If mother will stay with Randolph, I guess Eugenio will."

"Eugenio?" the young man inquired.

"Eugenio's our courier. He doesn't like to stay with Randolph; he's the most fastidious man I ever saw. But he's a splendid courier. I guess he'll stay at home with Randolph if mother does, and then we can go to the castle."

Winterbourne reflected for an instant as lucidly as possible—"we" could only mean Miss Daisy Miller and himself. This program seemed almost too agreeable for credence; he felt as if he ought to kiss the young lady's hand. Possibly he would have done so and quite spoiled the project, but at this moment another person, presumably Eugenio, appeared. A tall, handsome man, with superb whiskers, wearing a velvet morning coat and a brilliant watch chain, approached Miss Miller, looking sharply at her companion. "Oh, Eugenio!" said Miss Miller with the friendliest accent.

1

Which choice best summarizes the passage?

- A) It captures a conversation between two tourists in Switzerland.
- B) It describes the relationship between two friends.
- C) It paints a picture of life in Switzerland.
- D) It highlights the unconscious thoughts of an American traveler.

2

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

- A) responsive.
- B) informed.
- C) aware.
- D) watchful.

3

Based on the interaction between Miss Miller and Winterbourne, it can reasonably be inferred that Winterbourne

- A) feels comfortable expressing his feelings for Miss Miller.
- B) is afraid of ruining the plan to go to the castle with Miss Miller.
- C) is engaging with Miss Miller only in order to be polite.
- D) has reservations about joining Miss Miller to the castle.

4

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

- A) lines 27–28 (“But . . . Miller”)
- B) line 32 (“Most . . . declared”)
- C) lines 40–42 (“Winterbourne . . . himself”)
- D) line 44 (“Possibly . . . project”)

5

In the last paragraph, the words “reflected,” “lucidly,” and “felt” primarily serve to

- A) highlight the narrator’s neutral and objective point of view.
- B) foreshadow the future actions of a character.
- C) introduce a new character into the passage.
- D) shift the focus from a conversation to a character’s subjective thoughts.

This passage is excerpted from Herman Melville's "Redburn: His First Voyage," originally published in 1849. It describes the life of a young sailor during his first voyage across the Atlantic Ocean.

The order was given to loose the main-skysail, which is the fifth and highest sail from deck. It was a very small sail, and from the forecastle looked no bigger than a cambric pocket-handkerchief. But I have heard that some ships carry  
5 still smaller sails, above the skysail; called moon-sails, and skyscrapers, and cloud-rakers. But I shall not believe in them till I see them; a skysail seems high enough in all conscience; and the idea of anything higher than that, seems preposterous. Besides, it looks almost like tempting heaven,  
10 to brush the very firmament so, and almost put the eyes of the stars out; when a flaw of wind, too, might very soon take the conceit out of these cloud-defying cloud-rakers.

Now, when the order was passed to loose the skysail, an old Dutch sailor came up to me, and said, "Buttons, my boy,  
15 it's high time you be doing something; and it's boy's business, Buttons, to loose de royals, and not old men's business, like me. Now, d'ye see dat leelle fellow way up dare? dare, just behind dem stars dare: well, tumble up, now, Buttons, I zay, and looze him; way you go, Buttons."

20 All the rest joining in, and seeming unanimous in the opinion, that it was high time for me to be stirring myself, and doing boy's business, as they called it, I made no more ado, but jumped into the rigging. Up I went, not daring to look down, but keeping my eyes glued, as it were, to the  
25 shrouds, as I ascended.

It was a long road up those stairs, and I began to pant and breathe hard, before I was half way. But I kept at it till I got to the Jacob's Ladder; and they may well call it so, for it took me almost into the clouds; and at last, to my own amazement,  
30 I found myself hanging on the skysail-yard, holding on might and main to the mast; and curling my feet round the rigging, as if they were another pair of hands.

For a few moments I stood awe-stricken and mute. I could not see far out upon the ocean, owing to the darkness of the  
35 night; and from my lofty perch, the sea looked like a great, black gulf, hemmed in, all round, by beetling black cliffs. I seemed all alone; treading the midnight clouds; and every second, expected to find myself falling—falling—falling, as I have felt when the nightmare has been on me.

40 I could but just perceive the ship below me, like a long narrow plank in the water; and it did not seem to belong at all to the yard, over which I was hanging. A gull, or some sort of sea-fowl, was flying round the truck over my head, within a few yards of my face; and it almost frightened me to hear it;  
45 it seemed so much like a spirit, at such a lofty and solitary height.

1

Which choice best summarizes the passage?

- A) A character faces a difficult situation and describes the experience of confronting it.
- B) A character reflects on a past experience in order to inspire himself to action in the present.
- C) A character prepares to take a significant action but then decides not to undertake that action.
- D) A character undertakes an action but then questions the rightness of his decision.

2

In the first paragraph, the words "heaven," "firmament," and "stars" serve mainly to

- A) highlight the spiritual nature of sailing.
- B) illustrate the dangers involved in climbing the mast.
- C) describe the constellations in the night sky.
- D) emphasize the height of the skysail.

3

It can reasonably be inferred that the narrator decides to loosen the skysail because

- A) the crew would be in danger otherwise.
- B) the captain of the ship ordered him to.
- C) the other sailors on the ship agreed that he should.
- D) it was something he had always wanted to do.

4

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

- A) lines 1–2 (“The . . . deck”)
- B) lines 13–15 (“Now . . . something”)
- C) lines 20–23 (“All . . . rigging”)
- D) lines 23–25 (“Up . . . ascended”)

5

As used in line 36, “hemmed in” most nearly means

- A) attached
- B) framed
- C) controlled
- D) connected

# Science

This passage is excerpted from Joseph Mascaro, Gregory P Asner, Stuart Davies, Alex Dehgan, and Sassan Saatchi, "These Are the Days of Lasers in the Jungle," ©2014 by Joseph Mascaro, et al.

Just as the Moon's history was disrobed by laser ranging 50 years ago, Earth's tropical forests are giving up their secrets to the light. Airborne light detection and ranging—  
Line called LiDAR—has over the last ten years become a key tool  
5 that ecologists use to understand physical variation in tropical forests across space and time. Like an MRI of the human brain, LiDAR probes the intricate three-dimensional architecture of the forest canopy, unveiling carbon that forests keep out of the atmosphere, and also the mounting  
10 threats to that carbon storehouse: drought, fire, clandestine logging and brash gold-mining operations. Even the quintessential natural disturbance of the sun-filled light gap—long thought to enhance the incredibly high species diversity of tropical forests—has been deconstructed by laser  
15 technology.

Laser ranging in tropical forests is such a game-changing technology that science results can scarcely get through peer-review before they are dwarfed by still larger-scale studies. In a decade, laser power on commercial-grade LiDARs has  
20 skyrocketed and costs have plummeted. These improvements in LiDAR technology allow airplanes to fly faster, higher and farther, covering more forest area in a single day than every ground-based survey that has ever been collected in the history of tropical ecology. To estimate the amount of carbon  
25 stored in a 50-hectare tropical forest monitoring plot on the ground—the largest field plot in the world—takes a team of 12 people about eight months: a slog of rain and mud and snakes with tape measures and data log books. Today's airborne LiDARs can get you to within about 10% of the  
30 same carbon estimate in eight seconds.

It is this staggering contrast in scale between LiDAR and fieldwork that led us here: Before this decade is out, we could directly assess the carbon stock of every single square hectare of tropical forest on Earth. We could do it just as well  
35 as if we were standing there in the flesh with tape measures in hand. And we could do it for far less than what we have already spent to offset carbon emissions from forests. . .

It is easy in principle, though logistically nightmarish, to measure carbon in tropical forests. A strict constructionist  
40 would cut, dry and weigh the biomass of the world's forests. But this is a self-defeating enterprise. As a result, it is likely that no one has measured carbon over a single hectare of tropical forest, even with the most detailed field surveys. For a century ecologists and foresters have relied on allometric<sup>1</sup>  
45 estimation in lieu of carbon measurements to translate field surveys of tree diameters, heights and wood densities into whole-forest carbon estimates. Given a volume with known dimensions and density, one would estimate its mass in a similar fashion.

As the new kid on the block, LiDAR has been tacked onto the back end—initially thought of as kind of large-scale helper to field surveys. Carbon estimates from the field have been treated as something inherently closer to the real thing than measurements made by LiDAR—ground "Truth" with a  
55 capital "T". This is perhaps understandable historically, but vis-à-vis actual carbon, there is no such thing as ground truth: both field and LiDAR efforts rely on allometry to convert measurements into carbon estimates. Prior to using these

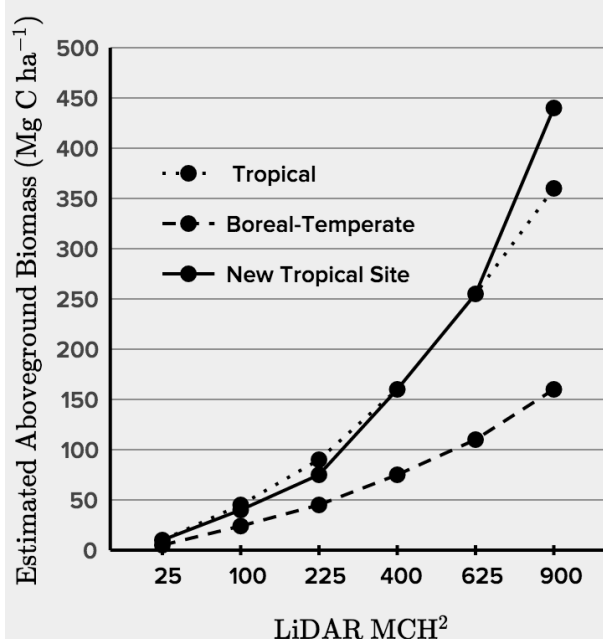
measurements for carbon estimation, they exist as  
60 standardized, spatially explicit, archivable and verifiable data—the needed substrate for a REDD<sup>2</sup>-type accounting program.

Due to the constancy of the underlying measurements, both field and LiDAR data could provide the needed  
65 information if they covered every hectare on Earth. But, in the case of field surveys, this is impossible. The surveys that do exist measure a tiny amount of actual forest, and so what might be verified is widely spaced. And to avoid fraud and protect landowners, many governments keep their plot  
70 locations secret. Satellite LiDAR data remain sparse, providing only extrapolated, coarse-resolution carbon estimates with very high uncertainties, and there is no prospect of wall-to-wall coverage in the near future. By 2020, airborne LiDAR could give us a direct measurement of  
75 3-D forest structure for every hectare in the tropics: a standardized database from which to build a carbon economy.

<sup>1</sup> Pertaining to the study of changing proportions in part of an organism or body resulting from growth.

<sup>2</sup> Reduced Emissions from Deforestation and Degradation, a program implemented by the United Nations Framework Convention on Climate Change.

Carbon Biomass and Mean Canopy Height (MCH) in Different Types of Forests



The graph illustrates the relationship in different types of forests between mean canopy vertical height profiles (MCH), as measured by LiDAR, and field-based estimates of carbon biomass.

Adapted from Gregory P. Asner, "Tropical Forest Carbon Assessment: Integrating Satellite and Airborne Mapping Approaches." ©2010 Institute of Physics and IOP Publishing.

# Science

1

The authors' central claim in the passage is that

- A) LiDAR's opponents have prevented the technology from advancing to a point where it might be scientifically useful, favoring traditional methods.
- B) Fieldwork and LiDAR are best used in combination when mapping carbon in tropical forests, in order to avoid human error while maintaining accuracy.
- C) LiDAR is as important a technology as MRI scanning or the scientific study of the moon with lasers.
- D) LiDAR technology is faster, cheaper, and nearly as accurate as traditional field methods for measuring the carbon biomass on Earth.

2

In the first paragraph, the words "disrobed," "unveiling" and "deconstructed" primarily serve to

- A) highlight the negative connotations that laser technology currently has.
- B) emphasize the extensive reach of laser technology.
- C) demonstrate the inherently unknowable characteristics of objects, even with laser technology.
- D) implicitly compare lasers to other forms of technology.

3

The authors imply that the main benefit of using LiDAR, as opposed to fieldwork, for measuring carbon in tropical forests is the

- A) scale and rapidity with which LiDAR can be used.
- B) expense of hiring scientists to carry out fieldwork.
- C) rapid changes and improvements in LiDAR technology.
- D) precision of LiDAR, which eliminates human error.

4

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

- A) lines 19–20 ("In . . . plummeted")
- B) lines 20–22 ("These . . . farther")
- C) lines 32–34 ("Before . . . Earth")
- D) lines 34–36 ("We could . . . hand")

5

As used in line 45 ("translate"), "translate" most nearly means

- A) convert.
- B) move.
- C) transform.
- D) express.

6

The authors use the phrase "ground 'Truth' with a capital 'T'" (lines 54–55) in order to

- A) argue that field measurements should be given up in order to focus exclusively on LiDAR measurements.
- B) illustrate the impossibility of ever gaining accurate and usable measurements from either fieldwork or LiDAR.
- C) defend the idea that LiDAR measurements are inherently more accurate than measurements obtained via fieldwork.
- D) note the excessive faith scientists have put in the accuracy of field-survey estimates.

7

The authors imply that the response of various officials to attempts to measure their countries' carbon stock through field surveys has been

- A) unhelpful, because they fear that jobs for their countries' scientists will be lost.
- B) helpful, because their countries have invested significantly in technology to allow studies to expand.
- C) helpful, because their countries stand to benefit from universal carbon data that the studies will uncover.
- D) unhelpful, because they do not make their countries' land holdings readily available for study.

8

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

- A) lines 63–65 ("Due . . . Earth")
- B) lines 66–68 ("The surveys . . . spaced")
- C) lines 68–70 ("And . . . secret")
- D) lines 70–73 ("Satellite . . . future")

# Science

9

The data in the graph support the authors' point in paragraph five (lines 50–62 “As . . . program.”) about the uses of LiDAR by

- A) providing an example of the use of information from LiDAR in conjunction with traditional field-based estimates.
- B) comparing data gathered by LiDAR technology from three separate forest sites.
- C) showing LiDAR's superior accuracy compared to data gathered through fieldwork, even though the graph uses estimated figures.
- D) presenting an example of the use of LiDAR in a tropical forest, which until this study was purely hypothetical.

11

The information from the graph best supports the claim that the carbon biomass of the three forests depicted is most disparate at

- A) 25 MCH<sup>2</sup>
- B) 225 MCH<sup>2</sup>
- C) 400 MCH<sup>2</sup>
- D) 900 MCH<sup>2</sup>

10

It can reasonably be inferred from the graph that

- A) for the same mean canopy height (above 25 MCH<sup>2</sup>), tropical forests have more carbon biomass than temperate forests.
- B) there is an inverse relationship between mean canopy vertical height and aboveground carbon biomass.
- C) at a mean canopy height of 625 MCH<sup>2</sup>, all three types of forests depicted will have approximately the same aboveground carbon biomass.
- D) on average, the new tropical forest has less aboveground carbon biomass at a given canopy height than the boreal-temperate forest depicted.

# Science

Passage adapted from Nikhil Swaminathan, "Eat (Less) to Live (Longer)," ©2007 by Scientific American.

Scientists have known for more than 70 years that the one surefire way to extend the lives of animals was to cut calories by an average of 30 to 40 percent. The question was: Why?

Line Now a new study begins to unravel the mystery and the  
5 mechanism by which reducing food intake protects cells against aging and age-related diseases.

Researchers report in the journal *Cell* that the phenomenon is likely linked to two enzymes—SIRT3 and SIRT4—in mitochondria (the cell's powerhouse that, among  
10 other tasks, converts nutrients to energy). They found that a cascade of reactions triggered by lower caloric intake raises the levels of these enzymes, leading to an increase in the strength and efficiency of the cellular batteries. By invigorating the mitochondria, SIRT3 and SIRT4 extend the  
15 life of cells, by preventing flagging mitochondria from developing tiny holes (or pores) in their membranes that allow proteins that trigger apoptosis, or cell death, to seep out into the rest of the cell.

"We didn't expect that the most important part of this  
20 pathway was in the mitochondria," says David Sinclair, an assistant professor of pathology at Harvard Medical School and a study co-author. "We think that we've possibly found regulators of aging."

In 2003 Sinclair's lab published a paper in *Nature* that  
25 described the discovery of a gene that switched on in the yeast cell in response to calorie restriction, which Sinclair calls a "master regulator in aging." Since then, his team has been searching for an analogous gene that plays a similar role in the mammalian cell.

30 The researchers determined from cultures of human embryonic kidney cells that lower caloric intake sends a signal that activates a gene inside cells that codes for the enzyme NAMPT (nicotinamide phosphoribosyltransferase). The two- to four-fold surge in NAMPT in turn triggers the  
35 production of a molecule called NAD (nicotinamide adenine dinucleotide), which plays a key role in cellular metabolism and signaling.

The uptick in NAD levels activates the SIRT3 and SIRT4 genes, increasing levels of their corresponding SIRT3 and  
40 SIRT4 enzymes, which then flood the interior of the mitochondria. Sinclair says he's not sure exactly how SIRT3 and SIRT4 beef up the mitochondria's energy output, but that events leading to cell death are at the very least delayed when there are vast quantities of the enzymes.

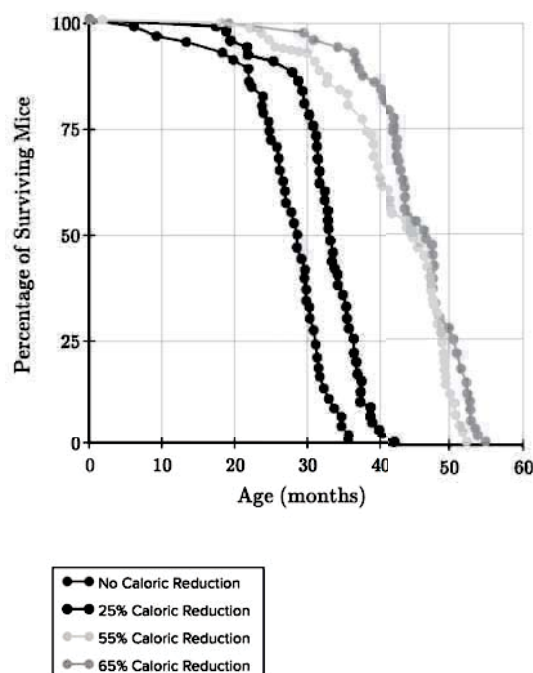
45 SIRT3 and SIRT4 are part of a family called sirtuins (SIRT1, which helps extend cell life by modulating the number of repair proteins fixing DNA damage both inside and outside the cell's nucleus, is also a member). SIRT is short for sir-2 homologue—a well-studied protein that is  
50 known to extend yeast cell longevity. According to Sinclair, all of the mammalian SIRT genes (and their proteins) are possible drug targets for therapies aimed at extending life, as well as staving off age-related illnesses, such as Alzheimer's disease, cancers and metabolic disorders, like diabetes.

55 "I think SIRT3 is the next most interesting sirtuin from a drug development standpoint," Sinclair says. "It does protect cells, but there's growing evidence that it may mediate the benefits of exercise as well."

Sinclair's lab is now working on developing what he calls  
60 a possible "supermouse" with elevated levels of NAMPT to see if it lives longer and is more disease-resistant than normal mice.

Matt Kaeberlein, a pathologist at the University of Washington in Seattle, says that Sinclair's team has an  
65 interesting hypothesis connecting the mitochondria to longevity, but that it needs to be more directly tested in the context of dietary restriction. "If the NAMPT-overexpressing mice are long-lived and disease resistant, that will provide more support for this idea."

Lifespan of Groups of Mice With Different Levels of Caloric Reduction



Adapted from Weindruch R, et al. (1986). "The Retardation of Aging in Mice by Dietary Restriction: Longevity, Cancer, Immunity, and Lifetime Energy Intake." *Journal of Nutrition*, April, 116(4), 641-54.

# Science

1

The author indicates that caloric reduction extends the life of a mammalian cell by

- A) turning off those genes involved in apoptosis, or cell death.
- B) forcing the mitochondria to utilize different energy sources for fuel.
- C) reducing the production of NAD (nicotinamide adenine dinucleotide).
- D) initiating a series of steps that results in the increased production of certain enzymes.

2

Based on the passage, SIRT-3 and SIRT-4 indirectly affect cell longevity by

- A) strengthening the mitochondrial membrane.
- B) fixing damage to the cell's DNA.
- C) initiating cell death.
- D) diminishing the efficiency of the cell's mitochondria.

3

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

- A) lines 7–9 (“Researchers . . . mitochondria”)
- B) lines 13–18 (“By . . . cell.”)
- C) lines 38–41 (“The . . . mitochondria.”)
- D) lines 41–44 (“Sinclair . . . enzymes.”)

4

The author's use of the words “powerhouse” and “batteries” in the second paragraph serves mainly to

- A) emphasize that mitochondria are the most important components of the cell.
- B) suggest that mitochondria use an electrical gradient to produce energy.
- C) stress that mitochondria are the main sources of energy for the cell.
- D) imply that mitochondria need to be recharged in order to function efficiently.

5

As used in line 15 (“flagging”), “flagging” most nearly means

- A) breaking.
- B) shrinking.
- C) folding.
- D) weakening.

6

The main purpose of the fifth paragraph (lines 30–37) is to

- A) suggest that caloric reduction has a different effect on yeast cells than mammalian cells.
- B) highlight the important role that the kidney plays in the aging process.
- C) clarify the intermediate steps between caloric reduction and improved mitochondrial efficiency.
- D) identify the negative relationship between NAMPT production and NAD production.

7

The author implies that the results of Sinclair's study will enable future scientists to

- A) reverse the aging process.
- B) diagnose patients with age-related illnesses from an earlier age.
- C) create mice that are essentially immortal.
- D) more effectively treat a number of age-related illnesses.

8

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

- A) lines 45–50 (“SIRT . . . longevity.”)
- B) lines 50–54 (“According . . . diabetes.”)
- C) lines 59–62 (“Sinclair's . . . mice.”)
- D) lines 67–69 (“If . . . idea.”)

# Science

9

The main purpose of the graph is to

- A) illustrate the relationship between caloric intake and longevity in different groups of mice.
- B) highlight how caloric reduction affects SIRT-3 enzyme production in different groups of mice.
- C) suggest that caloric reduction affects mice differently than it affects yeast.
- D) indicate that it is likely impossible to produce a genetically enhanced “supermouse.”

10

How does the information in the graph relate to the author’s claim that caloric reduction increases the longevity of mammalian cells?

- A) It supports the claim, but suggests that the differences in longevity are marginal after a 25% caloric reduction.
- B) It supports the claim since the average lifespan of each group of mice increases as caloric reduction increases.
- C) It does not support the claim since the group of mice that did not have any caloric reduction had the highest survival rate after 35 months.
- D) It does not support the claim since all four groups of mice had the same average lifespan.

11

It can reasonably be inferred from the graph that, 30 months into the study,

- A) all of the mice in the “55% caloric reduction” group were still alive.
- B) all of the mice in the “25% caloric reduction” group were still alive.
- C) approximately 50% of the mice in the “no caloric reduction” group were still alive.
- D) none of the mice in the “no caloric reduction” group were still alive.

# Science

Passage 1 is excerpted from Linden Miles, "The Meandering Mind: Vection and Mental Time Travel," ©2010 by Linden Miles. Passage 2 is excerpted from Justin Gregg, "A New Frontier in Animal Intelligence," ©2013 by Scientific American.

## Passage 1

The ability to travel mentally through time sets humans apart from many other species, yet little is known about this core cognitive capacity. In particular, what shapes the passage of the mind's journey through time?

5 A core facet of conscious experience is that one's mind periodically wanders from the here-and-now. From memories of lost loves to expectations about forthcoming vacations, mental time travel (MTT) makes it possible to revisit the past and pre-experience the future. Present across cultures and

10 emerging early in childhood, MTT is believed to serve a pivotal function in human cognition. When confronted with complex and challenging judgments, simulating future outcomes (i.e., prospection) on the basis of prior experience (i.e., retrospection) is a tactic that optimizes decision-making

15 and behavioral selection. That the past informs the future in this way (i.e., recollection-guides-simulation) is evidenced from research demonstrating that retrospection and prospection rely on largely overlapping neural structures and cognitive operations.

20 However, remarkably little is known about the actual process of MTT and how it impacts people's behavior. In this respect, one emerging possibility is that MTT may be represented in the sensory-motor systems that regulate human movement (i.e., MTT is embodied). Put simply,

25 traveling mentally in time may initiate associated bodily movements through space. Initial evidence for such a thought-action coupling during MTT was reported in a study in which spontaneous fluctuations in the direction and magnitude of postural sway were assessed while participants

30 engaged in either retrospective or prospective mental imagery. The results revealed that the temporal locus of MTT did indeed influence the direction of people's movements — whereas retrospection was accompanied by significant backwards sway, prospection yielded postural movement in

35 an anterior direction.

## Passage 2

Santino was a misanthrope with a habit of pelting tourists with rocks. As his reputation for mischief grew, he had to devise increasingly clever ways to ambush his wary victims. Santino learned to stash his rocks just out of sight and

40 casually stand just a few feet from them in order to throw off suspicion. At the very moment that passersby were fooled into thinking that he meant them no harm, he grabbed his hidden projectiles and launched his attack.

Santino, you see, is not human. He's a chimpanzee at

45 Furuvik Zoo in Sweden. His crafty stone-throwing escapades have made him a global celebrity, and also caught the attention of researchers studying how animals, much like humans, might be able to plan their behavior.

Santino is one of a handful of animals that scientists

50 believe are showing a complex cognitive ability called episodic memory. Episodic memory is the ability to recall past events that one has the sense of having personally experienced. Unlike semantic memory, which involves recalling simple facts like "bee stings hurt," episodic memory

55 involves putting yourself at the heart of the memory; like remembering the time you swatted at a bee with a rolled up newspaper and it got angry and stung your hand.

If an animal can imagine itself interacting with the world in the past via episodic memory – like Santino recalling a

60 failed attack when a human spotted him holding a rock, or you remembering swatting at a bee – it stands to reason that the animal might also be able to imagine itself in the future in a similar scenario, and thus plan its behavior. Santino might opt to hide his rocks, and you might decide to stop

65 antagonizing bees. The ability to represent oneself and one's actions in the mind's eye – both in the past [and] in the future – is what scientists refer to as "mental time travel."

# Science

1

Over the course of passage 1, the main focus shifts from

- A) a scientific study about mental time travel to an example of how humans use mental time travel in their daily lives.
- B) a description of the evolution of mental time travel to an evaluation of its limitations in humans.
- C) an explanation of mental time travel to a description of a study about its neurological basis.
- D) an argument in support of the existence of mental time travel to a counter-argument refuting its existence in humans.

2

It can reasonably be inferred from passage 1 that, in humans, the existence of mental time travel

- A) begins before birth.
- B) continues to develop throughout adulthood.
- C) is universal.
- D) is limited to certain populations around the world.

3

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

- A) lines 1–2 (“The . . . species”)
- B) lines 6–9 (“From . . . future”)
- C) lines 9–10 (“Present . . . childhood”)
- D) lines 11–15 (“When . . . selection”)

4

As used in line 11, “pivotal” most nearly means

- A) critical
- B) basic
- C) overriding
- D) urgent

5

In the first paragraph of passage 2, the use of the words “mischief,” “clever,” and “fooled” serves mainly to

- A) suggest that Santino had a violent disposition.
- B) call attention to Santino’s advanced cognitive abilities.
- C) imply that Santino was smarter than most chimpanzees.
- D) illustrate Santino’s reliance on semantic memory.

6

The author of passage 2 indicates that Santino’s use of episodic memory is most evidenced by his

- A) ability to recall past experiences.
- B) accuracy when throwing objects.
- C) disinterest in other chimpanzees.
- D) tendency to interact with humans.

7

According to passage 2, which choice best summarizes the relationship between episodic and semantic memory?

- A) Episodic memory is a more advanced form of semantic memory.
- B) Episodic memory relies on personal experiences while semantic memory relies on fact recollection.
- C) Episodic memory is an essential component of consciousness while semantic memory is not.
- D) Some animals are capable of episodic memory, but all animals are capable of semantic memory.

8

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

- A) lines 45–48 (“His . . . behavior”)
- B) lines 49–51 (“Santino . . . memory”)
- C) lines 53–55 (“Unlike . . . memory”)
- D) lines 65–67 (“The . . . travel”)

## Science

9

The authors of passage 1 and passage 2 would likely agree about which of the following characteristics of mental time travel?

- A) That it is similar to the concept of semantic memory
- B) That it is a sophisticated cognitive ability
- C) That it is present throughout the animal kingdom
- D) That it can affect the positioning and movement of the body

11

The author of passage 1 would likely use which of the following terms to describe Santino's ability to recall past events?

- A) Retrospection
- B) Prospection
- C) Simulation
- D) Semantic memory

10

Which of the following types of evidence is relied upon in passage 1 but not in passage 2?

- A) Expert testimonies
- B) Personal narratives
- C) Scientific studies
- D) Historical data

# Science

This passage is excerpted from David B. Wake and Vance T. Vredenburg, "Amphibians in Crisis." ©2008 by The National Academy of Sciences of the USA.

Amphibians have received much attention during the last two decades because of a now-general understanding that a larger proportion of amphibian species are at risk of extinction than those of any other taxon.\* Why this should be has perplexed amphibian specialists. A large number of factors have been implicated, including most prominently habitat destruction and epidemics of infectious diseases; global warming also has been invoked as a contributing factor. What makes the amphibian case so compelling is the fact that amphibians are long-term survivors that have persisted through the last four mass extinctions.

Paradoxically, although amphibians have proven themselves to be survivors in the past, there are reasons for thinking that they might be vulnerable to current environmental challenges and, hence, serve as multipurpose sentinels of environmental health. The typical life cycle of a frog involves aquatic development of eggs and larvae and terrestrial activity as adults, thus exposing them to a wide range of environments.

Frog larvae are typically herbivores, whereas adults are carnivores, thus exposing them to a wide diversity of food, predators, and parasites. Amphibians have moist skin, and cutaneous respiration is more important than respiration by lungs. The moist, well vascularized skin places them in intimate contact with their environment. One might expect them to be vulnerable to changes in water or air quality resulting from diverse pollutants. Amphibians are thermal-conformers, thus making them sensitive to environmental temperature changes, which may be especially important for tropical montane (e.g., cloud forest) species that have experienced little temperature variation. Such species may have little acclimation ability in rapidly changing thermal regimes. In general, amphibians have small geographic ranges, but this is accentuated in most terrestrial species (the majority of salamanders; a large proportion of frog species also fit this category) that develop directly from terrestrial eggs that have no free-living larval stage. These small ranges make them especially vulnerable to habitat changes that might result from either direct or indirect human activities.

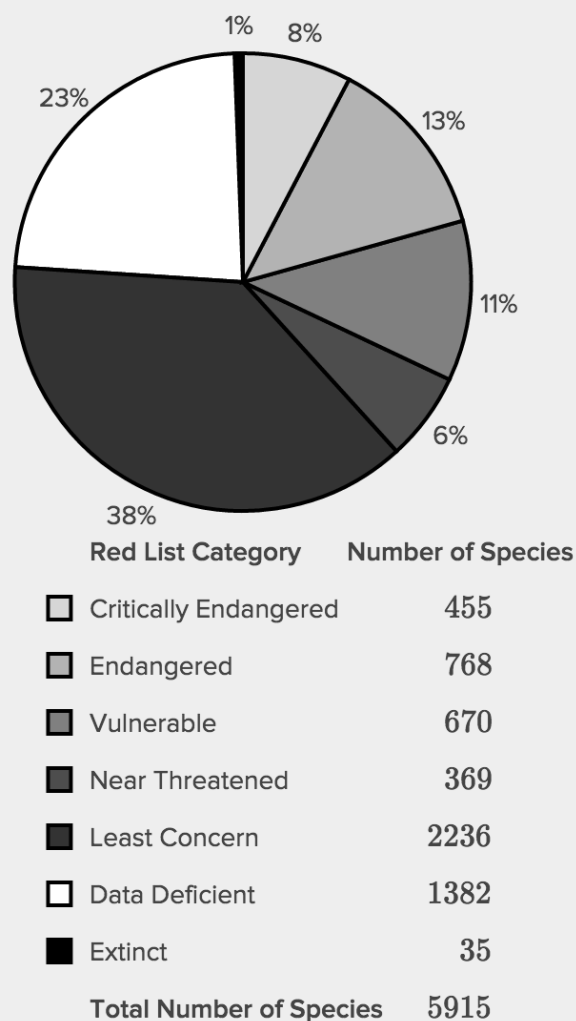
Living amphibians (Class Amphibia, Subclass Lissamphibia) include frogs (~5,600 currently recognized species), salamanders (~570 species), and caecilians (~175 species). Most information concerning declines and extinctions has come from studies of frogs, which are the most numerous and by far the most widely distributed of living amphibians. Salamanders facing extinctions are centered in Middle America. Caecilians are the least well known; little information on their status with respect to extinction exists.

The Global Amphibian Assessment completed its first round of evaluating the status of all then-recognized species in 2004, finding 32.5% of the known species of amphibians to be "globally threatened" by using the established top three categories of threat of extinction (i.e. Vulnerable, Endangered, or Critically Endangered); 43% of species have declining populations. In general, greater numbers as well as proportions of species are at risk in tropical countries.

Updates from the Global Amphibian Assessment are ongoing and show that, although new species described since 2004 are mostly too poorly known to be assessed, >20% of analyzed species are in the top three categories of threat. Species from montane tropical regions, especially those associated with stream or streamside habitats, are most likely to be severely threatened.

\*A group of one or more populations of an organism or organisms seen by taxonomists to form a unit.

Breakdown of Known Amphibian Species, by Red List Category



Adapted from Stuart, S.N., Hoffman, M., Chanson, J.S., Cox, N.A., Berridge, R.J., Ramani, P., and Young, B.E. (eds), *Threatened Amphibians of the World*. ©2008 by Lynx Editions.

# Science

1

The main idea of the first two paragraphs is that amphibians

- A) have traditionally been very persistent but are now disproportionately endangered.
- B) face a risk of extinction greater than that of any other group of organisms.
- C) have been praised by scientists for their ability to withstand the last four mass extinctions.
- D) now face extinction across all species because of human activity.

2

As used in line 9, "compelling" most nearly means

- A) urgent.
- B) captivating.
- C) overwhelming.
- D) forced.

3

The author implies that the study of frogs and other amphibians is especially important because these species

- A) are sensitive to environmental changes that might affect other species in the future.
- B) have less ability to adapt to changing environmental conditions than other species do.
- C) are exposed to more predators and parasites than other species are.
- D) embody the principles of evolution more clearly and linearly than other species do.

4

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

- A) lines 12–16 ("Paradoxically . . . health")
- B) lines 16–19 ("The typical . . . environments")
- C) lines 20–22 ("Frog . . . parasites")
- D) lines 22–24 ("Amphibians . . . lungs")

5

The author discusses the thermal conformity of amphibians in order to

- A) show why they are so susceptible to being harmed by changes in their environments.
- B) contrast them with other types of animals that other scientists have studied in greater depth.
- C) prove that amphibians are the most sensitive of all animals and therefore need to be treated with greater care.
- D) question why the geographic ranges of amphibians is so small compared to that of other species.

6

Frogs have been studied more than other amphibians because

- A) members of other species are less common and not found in as many places.
- B) they model human biology better than other amphibians.
- C) so many other amphibian species have recently become extinct.
- D) their sensitivity to environments makes them ideal for study.

7

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

- A) lines 40–43 ("Living . . . species")
- B) lines 43–46 ("Most . . . amphibians")
- C) lines 46–47 ("Salamanders . . . America")
- D) lines 47–49 ("Caecilians . . . exists")

# Science

8

The phrase “globally threatened” (line 53) primarily serves to

- A) show that scientists consider amphibians’ future perilous by the seriousness of the terms.
- B) lend authority to the author’s argument about amphibian extinction by using a well-recognized phrase.
- C) quote the scientists at The Global Amphibian Assessment so that readers understand the limited nature of their statistics.
- D) demonstrate that, though amphibians have been referred to as threatened, this term is questionably applied.

9

The graph supports the statement in the last paragraph about the evaluation completed in 2004 by

- A) demonstrating that approximately  $\frac{1}{3}$  of amphibian species are in the top three categories of threat.
- B) showing that only 1% of amphibians have gone extinct in the wild, despite predictions to the contrary.
- C) highlighting that scientists have not collected enough data on a significant number of amphibian species.
- D) proving that the remaining species of amphibians will become extinct in the future.

10

Information from the graph and the passage suggests that the second-largest category includes most of the world’s

- A) caecilians.
- B) salamanders.
- C) frogs.
- D) montane amphibians.

11

The third-largest category represents amphibians that are classified as

- A) endangered.
- B) least concern.
- C) extinct.
- D) vulnerable.

# Science

Adapted from Abi Berger, "Magnetic Resonance Imaging," ©2002 by Abi Berger.

Line Magnetic resonance imaging (MRI) uses the body's  
natural magnetic properties to produce detailed images from  
any part of the body. For imaging purposes the hydrogen  
nucleus (a single proton) is used because of its abundance in  
5 water and fat.

The hydrogen proton can be likened to the planet earth,  
spinning on its axis, with a north-south pole. In this respect  
it behaves like a small bar magnet. Under normal  
circumstances, these hydrogen proton "bar magnets" spin in  
10 the body with their axes randomly aligned. When the body is  
placed in a strong magnetic field, such as an MRI scanner,  
the protons' axes all line up. This uniform alignment creates  
a magnetic vector oriented along the axis of the MRI  
scanner. MRI scanners come in different field strengths,  
15 usually between 0.5 and 1.5 tesla.

The strength of the magnetic field can be altered  
electronically from head to toe using a series of gradient  
electric coils, and, by altering the local magnetic field by  
these small increments, different slices of the body will  
20 resonate as different frequencies are applied.

When the radiofrequency source is switched off the  
magnetic vector returns to its resting state, and this causes a  
signal (also a radio wave) to be emitted. It is this signal which  
is used to create the MR images. Receiver coils are used  
25 around the body part in question to act as aerials to improve  
the detection of the emitted signal. The intensity of the  
received signal is then plotted on a grey scale and cross  
sectional images are built up.

Multiple transmitted radiofrequency pulses can be used  
30 in sequence to emphasise particular tissues or abnormalities.  
A different emphasis occurs because different tissues relax at  
different rates when the transmitted radiofrequency pulse is  
switched off. The time taken for the protons to fully relax is  
measured in two ways. The first is the time taken for the  
35 magnetic vector to return to its resting state and the second  
is the time needed for the axial spin to return to its resting  
state. The first is called T1 relaxation, the second is called T2  
relaxation.

An MR examination is thus made up of a series of pulse  
40 sequences. Different tissues (such as fat and water) have  
different relaxation times and can be identified separately. By  
using a "fat suppression" pulse sequence, for example, the  
signal from fat will be removed, leaving only the signal from  
any abnormalities lying within it.

45 Most diseases manifest themselves by an increase in water  
content, so MRI is a sensitive test for the detection of disease.  
The exact nature of the pathology can be more difficult to  
ascertain: for example, infection and tumour can in some  
cases look similar. A careful analysis of the images by a  
50 radiologist will often yield the correct answer.

There are no known biological hazards of MRI because,  
unlike x ray and computed tomography, MRI uses radiation  
in the radiofrequency range which is found all around us and  
does not damage tissue as it passes through.

Magnetic Vector (T1) and Axial Spin (T2) Relaxation Times for  
Different Molecules/Tissues, in Milliseconds.

Tissue	T1 (msec)	T2 (msec)
Water	4,000	2,000
Gray Matter	900	90
Muscle	900	50
Liver	500	40
Fat	250	70
Tendon	400	5

Source: Data from Bottomley PA, et al. "A Review of Normal Tissue  
Hydrogen NMR Relaxation Times and Relaxation Mechanisms from 1-  
100 MHz: Dependence on Tissue Type, NMR Frequency,  
Temperature, Species, Exision, and Age." Med Phys 1984;11:425-448

# Science

1

Which choice best reflects the author's point of view regarding magnetic resonance imaging (MRI)?

- A) It is the most important tool used by scientists to aid in the diagnosis of particular diseases.
- B) It is a valuable and effective technique but should be used sparingly in order to prevent possible damage to the body.
- C) It is a breakthrough technology that will revolutionize the treatment of particular ailments.
- D) It is a useful tool in disease diagnosis, although specialized training is required to accurately interpret MRI images.

2

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

- A) lines 16-20 ("The strength ... applied")
- B) lines 29-33 ("Multiple ... off")
- C) lines 40-44 ("Different ... it")
- D) lines 45-50 ("Most ... answer")

3

It can reasonably be inferred from the passage that, like a bar magnet, the nucleus of a hydrogen atom

- A) spins in a counter-clockwise direction.
- B) is responsive to external magnetism.
- C) attracts metallic substances.
- D) is surrounded by electrons.

4

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

- A) an explanation of how magnetic resonance imaging (MRI) works to a discussion of MRI's practical advantages.
- B) a story about the origin of magnetic resonance imaging (MRI) to a discussion of alternative imaging methods used by scientists.
- C) an explanation of tissue relaxation rates to a summary of the magnetic properties of hydrogen protons.
- D) an introduction about the properties of radiofrequency waves to a criticism of the health risks of x-ray devices.

5

The "planet earth" image in line 6 mainly serves to

- A) highlight an unlikely parallel between the fields of biology and astronomy.
- B) inject a note of humor into an otherwise serious explanation of magnetic resonance imaging.
- C) create a pun centered on the idea that hydrogen is necessary for life on this planet.
- D) communicate a complex scientific idea using a more familiar concept.

6

It can reasonably be inferred from the passage that electromagnetic waves in the radiofrequency range

- A) do not create long-lasting effects on the human body.
- B) only create magnetic fields in tissues with high water content.
- C) are stronger than waves in the x-ray range.
- D) always travel in the same direction.

# Science

7

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

- A) lines 21-23 ("When ... emitted")
- B) lines 26-28 ("The ... up")
- C) lines 33-37 ("The time ... state")
- D) lines 51-54 ("There ... through")

8

As used in line 46, "sensitive" most nearly means

- A) appreciate.
- B) unstable.
- C) discerning.
- D) observant.

9

The data in the table support the author's point that

- A) pulse relaxation times can be used to identify different tissues in the body.
- B) magnetic resonance imaging is safer than other imaging techniques.
- C) infections and tumors look similar using magnetic resonance imaging.
- D) hydrogen protons behave like a small bar magnet.

10

According to the table, which tissue is the first to return to its original magnetic vector resting state?

- A) Water/CSF
- B) Liver
- C) Fat
- D) Tendon

11

It can reasonably be inferred from the table that

- A) some tissues display axial spin relaxation times that are much longer than their magnetic vector relaxation times.
- B) it generally takes longer for the magnetic vector to return to its resting state than the axial spin.
- C) it often takes twice as long for the axial spin to return to its resting state than the magnetic vector.
- D) it always takes at least three times as long for the magnetic vector to return to its resting state than the axial spin.

# Science

This passage is excerpted from Leyra Castro and Ed Wasserman, "Crows Understand Analogies," © Scientific American 2015.

A recent research collaboration has discovered that crows exhibit strong behavioral signs of analogical reasoning—the ability to solve puzzles like “bird is to air as fish is to what?”  
Line Analogical reasoning is considered to be the pinnacle of  
5 cognition and it only develops in humans between the ages of three and four.

Why might crows be promising animals to study? Of course, crows are reputed to be clever. Aesop’s famous fable “The Crow and the Pitcher” tells of a crow solving a  
10 challenging problem: the thirsty crow drops pebbles into a pitcher with water near the bottom, thereby raising the fluid level high enough to permit the bird to drink. Such tales are charming and provocative, but science cannot rely on them.

Recent scientific research sought to corroborate this fable.  
15 It found that crows given a similar problem dropped stones into a tube containing water, but not into a tube containing sand. Crows also chose to drop solid rather than hollow objects into the water tube. It thus seems that crows do indeed understand basic cause-effect relations.

But, what happens when crows are given problems that require more abstract thinking? Before setting our sights on analogical reasoning, we might begin with a simpler abstract task. For example, sameness and differentness are key abstract ideas, because two or more items of any kind—  
25 coins, cups, caps, or cars—can be the same as or different from one another. Because sameness and differentness can be detected visually, perhaps that may provide an elegant way to study their apprehension by nonverbal animals.

To do so, we present visual stimuli on a touchscreen  
30 monitor. We reward animals with food for contacting one button when sets contain identical items and we reward animals for contacting a second button when sets contain non-identical items. Several species of birds and mammals learn this task and also transfer their learning to new stimuli,  
35 showing that they have learned an abstract concept, which extends beyond the training items.

Devising a task to study analogical thinking in animals is the next step. Here, the gist of analogy can be captured by arranging a matching task in which the relevant logical  
40 arguments are presented in the form of visual stimuli. Using letters of the alphabet for explanatory purposes, choosing test pair BB would be correct if the sample pair were AA, whereas choosing test pair EF would be correct if the sample pair were CD. Stated logically, A:A as B:B (same = same) and  
45 C:D as E:F (different = different). Critically, no items in the correct test pair physically match any of the items in the sample pair; so, only the analogical relation of sameness can be used to solve the task.

Now, we have found that crows too can exhibit analogical  
50 thinking. Ed Wasserman, one of the authors of this article, and his colleagues in Moscow, Anna Smirnova, Zoya Zorina, and Tanya Obozova, first trained hooded crows on several tasks in which they had to match items that were the same as one another. The crows were presented with a tray  
55 containing three cups. The middle cup was covered by a card picturing a color, a shape, or a number of items. The other two side cups were also covered by cards—one the same as and one different from the middle card. The cup under the matching card contained food, but the cup under the  
60 nonmatching card was empty. Crows quickly learned to

choose the matching card and to do so more quickly from one task to the next.

Then, the critical test was given. Each card now pictured a pair of items. The middle card would display  
65 pairs AA or CD, and the two side cards would display pair BB and pair EF. The relation between one pair of items must be appreciated and then applied to a new pair of items to generate the correct answer: the BB card in the case of AA or the EF card in the case of CD. For instance,  
70 if the middle card displayed a circle and a cross, then the correct choice would be the side card containing a square and a triangle rather than the side card containing two squares.

Not only could the crows correctly perform this task,  
75 but they did so spontaneously, from the very first presentations, without ever being trained to do so. It seems that initial training to match identical items enabled the crows to grasp a broadly applicable concept of sameness that could apply to the novel two-item analogy  
80 task. Such robust and uninstructed behavior represents the most convincing evidence yet of analogical reasoning in a non-primate animal.

Percentage of Crows Correct Responses in 8 Sessions of Identical-Matching Tasks

Bird	Crow 1			Crow 2		
	Size	Shape	Color	Size	Shape	Color
Session 1	77.8	75.0	66.7	75.0	63.9	77.8
Session 2	75.0	80.6	80.6	72.2	63.9	72.2
Session 3	86.1	61.1	86.1	72.2	63.9	72.2
Session 4	86.1	69.4	75.0	66.7	75.0	80.6
Session 5	72.2	80.6	69.4	86.1	83.3	86.1
Session 6	80.6	69.4	75.0	72.2	66.7	83.3
Session 7	77.8	63.9	63.9	86.1	75.0	77.8
Session 8	80.6	66.7	91.7	80.6	77.8	80.6
Sessions 1-8 (averaged)	79.5	70.8	76.0	76.4	71.2	78.8

Adapted from Anna Smirnova et al., "Crows Spontaneously Exhibit Analogical Reasoning." (C) 2015 by Elsevier Ltd.

# Science

1

The main purpose of the passage is to

- A) present research approaches used to determine that crows may be able to think analogically.
- B) show that crows have been proven to be the smartest of all non-primate animals.
- C) argue that crows need proper training in order to perform complex and advanced tasks.
- D) explain that scientists' understanding of crows likely will progress rapidly following a recent study.

2

As used in line 2, "strong" most nearly means

- A) powerful.
- B) compelling.
- C) intense.
- D) extreme

3

In the fourth paragraph, the phrase "sameness and differentness" primarily serves to

- A) introduce a concept that is central to the experiments described later.
- B) refer to the topic that led researchers to begin studying reasoning in animals.
- C) reveal that expert scientists sometimes use everyday language in their reports.
- D) emphasize that certain terms must be used when describing intelligent animals.

4

The discussion of animals' ability to apply a learned skill in various testing scenarios suggests that some animals

- A) grasp concepts because they are similar to things they experience in the wild.
- B) are capable of understanding the shared concept that underlies different tasks.
- C) cannot differentiate between "sameness" and "difference" after being trained.
- D) learn a new task most quickly when they have just repeated a different task many times.

5

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

- A) lines 26-28 ("Because ... animals")
- B) lines 30-33 ("We reward ... items")
- C) lines 33-36 ("Several species ... items")
- D) lines 38-40 ("Here ... stimuli")

6

Based on the authors' initial explanation of the analogical matching task, a sample pair with a triangle and a square would most correctly be

- A) Two triangles.
- B) A circle and a cross.
- C) Two squares.
- D) A square and a cross.

7

It can be reasonably inferred that a key difference between the two parts of the study done by Ed Wasserman and his colleagues is that the second part

- A) required a more complex task.
- B) involved direct observation, while the first experiment was viewed on a monitor.
- C) involved a new analogical relationship.
- D) tested learned abilities, while the second experiment tested natural abilities.

8

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

- A) lines 54-58 ("The crows ... card")
- B) lines 58-60 ("The cup ... empty")
- C) lines 63-68 ("Each ... answer")
- D) lines 74-75 ("Not ... spontaneously")

# Science

9

The averaged results for sessions 1-8 as shown in the chart reveal that

- A) Crow 1 was generally more successful at matching size and Crow 2 was generally more successful at matching color.
- B) Crow 1 was generally more successful at matching shape and Crow 2 was generally more successful at matching size.
- C) Crow 1 was generally more successful at matching shape and Crow 2 was generally more successful at matching color.
- D) Crow 1 was generally more successful at matching color and Crow 2 was generally more successful at matching size.

10

Which statement can be reasonably inferred from the information in the passage and the graph?

- A) Crows' ability to match objects steadily improves as new dimensions are introduced.
- B) Researchers can see evidence of learning even when an animal's performance on a task is inconsistent during observation.
- C) Crows perform differently on matching tasks when they are aware that they are being observed.
- D) Researchers may influence the outcome of scientific trials with animals by varying their teaching methods.

11

The information from the chart best supports the authors' claim that the crows

- A) easily understood the relationship between two unlike objects.
- B) recognized that a learned skill could be applied to a new task.
- C) quickly learned to complete the matching task.
- D) grasped the concept of cause-effect relationships.

# Science

Adapted from "NASA's NuSTAR Helps Solve Riddle of Black Hole Spin." © 2013 by NASA.

Two X-ray space observatories, NASA's Nuclear Spectroscopic Telescope Array (NuSTAR) and the European Space Agency's XMM-Newton, have teamed up to measure, for the first time, the spin rate of a black hole with a mass two million times that of our sun.

The supermassive black hole lies at the dust- and gas-filled heart of a galaxy called NGC 1365, and it is spinning almost as fast as Einstein's theory of gravity will allow. The findings, which appear in a new study in the journal *Nature*, resolve a long-standing debate about similar measurements in other black holes and will lead to a better understanding of how black holes and galaxies evolve.

"This is hugely important to the field of black hole science," said Lou Kaluzienski, a NuSTAR program scientist at NASA Headquarters in Washington.

The observations also are a powerful test of Einstein's theory of general relativity, which says gravity can bend space-time, the fabric that shapes our universe, and the light that travels through it.

"We can trace matter as it swirls into a black hole using X-rays emitted from regions very close to the black hole," said the coauthor of a new study, NuSTAR principal investigator Fiona Harrison of the California Institute of Technology in Pasadena. "The radiation we see is warped and distorted by the motions of particles and the black hole's incredibly strong gravity."

NuSTAR, an Explorer-class mission launched in June 2012, is designed to detect the highest-energy X-ray light in great detail. It complements telescopes that observe lower-energy X-ray light, such as XMM-Newton and NASA's Chandra X-ray Observatory. Scientists use these and other telescopes to estimate the rates at which black holes spin.

Until now, these measurements were not certain because clouds of gas could have been obscuring the black holes and confusing the results. With help from XMM-Newton, NuSTAR was able to see a broader range of X-ray energies and penetrate deeper into the region around the black hole. The new data demonstrate that X-rays are not being warped by the clouds, but by the tremendous gravity of the black hole. This proves that spin rates of supermassive black holes can be determined conclusively.

Measuring the spin of a supermassive black hole is fundamental to understanding its past history and that of its host galaxy.

"These monsters, with masses from millions to billions of times that of the sun, are formed as small seeds in the early universe and grow by swallowing stars and gas in their host galaxies, merging with other giant black holes when galaxies collide, or both," said the study's lead author, Guido Risaliti of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass., and the Italian National Institute for Astrophysics.

Supermassive black holes are surrounded by pancake-like accretion disks, formed as their gravity pulls matter inward. Einstein's theory predicts that the faster a black hole spins, the closer the accretion disk lies to the black hole. The closer the accretion disk is, the more gravity from the black hole will warp X-ray light streaming off the disk.

Astronomers look for these warping effects by analyzing X-ray light emitted by iron circulating in the accretion disk. In the new study, they used both XMM-Newton and NuSTAR to simultaneously observe the black hole in NGC 1365. While XMM-Newton revealed that light from the iron was being warped, NuSTAR proved that this distortion was coming from the gravity of the black hole and not gas clouds in the vicinity. NuSTAR's higher-energy X-ray data showed that the iron was so close to the black hole that its gravity must be causing the warping effects. With the possibility of obscuring clouds ruled out, scientists can now use the distortions in the iron signature to measure the black hole's spin rate. The findings apply to several other black holes as well, removing the uncertainty in the previously measured spin rates.

# Science

1

The main purpose of the passage is to

- A) contradict a longstanding scientific hypothesis.
- B) discuss the findings and implications of a recent study.
- C) show how modern technology can improve scientific observations.
- D) inform readers about the history of a phenomenon.

2

In designing their study, the scientists most probably thought of Einstein's theory of gravity as

- A) an outdated model which needed to be updated to incorporate new technologies.
- B) a scientific breakthrough that had yet to be tested and proven correct.
- C) a baseline hypothesis that they hoped to validate through the study's experiments.
- D) a major scientific discovery that they wanted to update and revise in their study.

3

As used in line 39, "tremendous" most nearly means

- A) colossal.
- B) amazing.
- C) dreadful.
- D) appalling.

4

What effect does the word "monsters" (line 45) have on the tone of the passage?

- A) It creates a heightened tone that reinforces the massive size of black holes.
- B) It creates a frightening tone that suggests that black holes are something to fear.
- C) It creates an alarming tone that implies that measuring black holes is impossible.
- D) It creates a menacing tone that hints at the destructive power of black holes.

5

According to the passage, gas clouds are relevant to the field of black hole science due to the

- A) effect that they have had in preventing the accurate collection of black hole data.
- B) extent to which they are linked in a symbiotic relationship with black holes.
- C) ability they have to warp the view of the study's telescopes in space.
- D) degree to which they are connected to Einstein's theory regarding accretion disks.

6

Which best describes the roles played in the study by NuSTAR and XMM-Newton?

- A) NuSTAR provided more precise information about a finding made by XMM-Newton.
- B) XMM-Newton was able to see more deeply into space than NuSTAR.
- C) XMM-Newton validated a finding first made by NuSTAR.
- D) NuSTAR's X-ray data contradicted XMM-Newton's findings.

7

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

- A) lines 1-5 ("two ... sun")
- B) lines 27-29 ("NuSTAR ... detail")
- C) lines 61-63 ("In ... 1365")
- D) lines 63-66 (While ... vicinity)

8

The best restatement of the author's view of the study's findings is that the author

- A) believes the findings eliminate previous ambiguities.
- B) is concerned that there is not enough evidence to prove the scientists' theory.
- C) accepts that the study's findings require no further research.
- D) concludes that more questions than answers have been raised.

## Science

9

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

- A) lines 38-40 ("The ... hole")
- B) lines 42-44 ("Measuring ... galaxy")
- C) lines 70-72 (With ... rate)
- D) lines 72-74 ("The ... rates")

10

The passage makes the most extensive use of which type of evidence?

- A) Scientific observations
- B) Expert testimony
- C) Historical documentation
- D) Statistical evidence

11

The author includes a quote from Guido Risaliti (lines 45-49) most likely to

- A) help readers understand black holes as unknowable and dangerous.
- B) support the claim that supermassive black holes have a warping effect.
- C) back up the argument that black holes and galaxies remain a mystery.
- D) add context to the discussion of the importance of spin rates.

# Science

This passage is adapted from Steven C. Pan, "The Interleaving Effect: Mixing It Up Boosts Learning." ©2015 by Scientific American.

We've all heard the adage: practice makes perfect! In other words, acquiring skills takes time and effort. But how exactly does one go about learning a complex subject such as tennis, calculus, or how to play the violin? An age-old answer is: practice one skill at a time. A beginning pianist might rehearse scales before chords. A tennis player practices the forehand before the backhand. Learning researchers call this "blocking," and because it is commonsensical and easy to schedule, blocking is dominant in schools and training programs.

However, another strategy promises improved results. Enter "interleaving," a largely unheard-of technique that is capturing the attention of cognitive psychologists and neuroscientists. Whereas blocking involves practicing one skill at a time before the next (for example, "skill A" before "skill B" and so on, forming the pattern "AAABBBCCC"), in interleaving one mixes, or interleaves, practice on several related skills together (forming for example the pattern "ABCABCABC"). For instance, a pianist alternates practice between scales, chords, and arpeggios, while a tennis player alternates practice between forehands, backhands, and volleys.

Given interleaving's promise, it is surprising then that few studies have investigated its utility in everyday applications. However, a new study by cognitive psychologist Doug Rohrer takes a step towards addressing that gap. Rohrer and his team are the first to implement interleaving in actual classrooms. The location: middle schools in Tampa, Florida. The target skills: algebra and geometry.

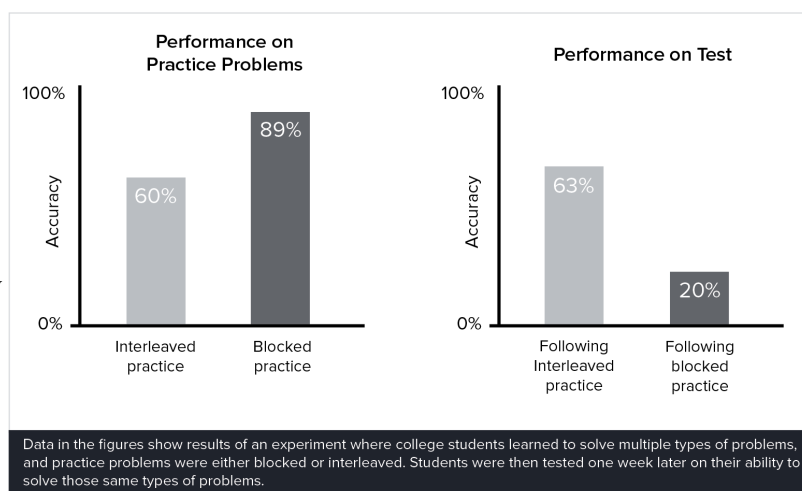
The three-month study involved teaching 7th graders slope and graph problems. Weekly lessons were largely unchanged from standard practice. Weekly homework worksheets, however, featured an interleaved or blocked design. When interleaved, both old and new problems of different types were mixed together. Of the nine participating classes, five used interleaving for slope problems and blocking for graph problems; the reverse occurred in the remaining four. Five days after the last lesson, each class held a review session for all students. A surprise final test occurred one day or one month later. The result? When the test was one day later, scores were 25 percent better for problems trained with interleaving; at one month later, the interleaving advantage grew to 76 percent.

These results are important for a host of reasons. First, they show that interleaving works in real-world, extended use. It is highly effective with an almost ubiquitous subject, math. The interleaving effect is long-term and the advantage over blocking actually increases with the passage of time. The benefit even persists when blocked materials receive additional review. Overall, the interleaving effect can be strong, stable, and long-lasting.

Researchers are now working to understand why interleaving yields such impressive results. One prominent explanation is that it improves the brain's ability to tell apart concepts. With blocking, once you know what solution to use, the hard part is over. With interleaving, each practice attempt is different from the last, so rote responses don't work. Instead, your brain must continuously focus on searching for different solutions. That process can improve your ability to learn critical features of skills.

A second explanation is that interleaving strengthens memory associations. With blocking, a single strategy, temporarily held in short-term memory, is sufficient. That's not the case with interleaving—the correct solution changes from one practice attempt to the next. As a result, your brain is continually engaged at retrieving different responses and bringing them into short-term memory.

Both of these accounts imply that increased effort during training is needed when interleaving is used. This corresponds to a potential drawback of the technique, namely that the learning process often feels more gradual and difficult at the outset. However, that added effort can generate better, longer-lasting results.



Adapted from Doug Rohrer and Kelli Taylor, "The Shuffling of Mathematics Problems Improves Learning." ©2007 by Springer Science + Business Media Inc.

Data in the figures show results of an experiment where college students learned to solve multiple types of problems, and practice problems were either blocked or interleaved. Students were then tested one week later on their ability to solve those same types of problems.

# Science

1

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

- A) an evaluation of a popular learning strategy to a consideration of several lesser-known but potentially more effective strategies.
- B) a presentation of experts' opinions on two learning strategies to an argument based on the author's own opinion.
- C) an explanation of two learning strategies to a discussion of a study that shows the benefits of one strategy over the other.
- D) a description of the learning strategies traditionally used by musicians and athletes to a recommendation to employ an alternative strategy.

2

The main effect of the words "adage" (line 1) and "age-old" (line 4) is to

- A) emphasize the prevalence of certain assumptions about learning.
- B) reveal that a method of learning has been extensively researched on a method of learning.
- C) highlight the reliability of a commonsense approach to learning.
- D) suggest that a style of learning is the subject of ongoing debate.

3

In the second paragraph (lines 11-22) the references to the pianist and the tennis player primarily illustrate

- A) the most common technique used to teach complicated skills.
- B) the process of interleaving in specific contexts.
- C) the difficulties associated with mastering complex subjects.
- D) the skepticism teachers exhibit towards the interleaving method.

4

It can reasonably be inferred from the passage that most researchers interested in skills acquisition are

- A) unconcerned with the relevance of interleaving to people's routine activities.
- B) focused on how interleaving improves athletes' performance.
- C) intent on examining the function of blocking within an educational setting.
- D) undecided about whether interleaving is an effective alternative to blocking.

5

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

- A) lines 7-10 ("Learning . . . programs")
- B) lines 14-19 ("Whereas . . . ABCABCABC")
- C) lines 19-22 ("For . . . volleys")
- D) lines 23-24 ("Given . . . applications")

6

As used in line 53, "yields" most nearly means

- A) surrenders.
- B) slows.
- C) rewards.
- D) produces.

7

The author of the passage would most likely agree with which perspective on interleaving?

- A) It is more beneficial when an individual wants to learn numerous unrelated skills than when an individual wants to learn several related skills.
- B) It may demand more time and exertion than other approaches to learning but is likely to have a more valuable outcome.
- C) If it is applied consistently it can train the brain to distinguish between relevant and irrelevant information.
- D) It may require more studies on its effectiveness before neuroscientists recommend it be used in classroom instruction.

# Science

8

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

- A) lines 48–50 (“The benefit ... review”)
- B) lines 53–56 (“One ... over”)
- C) lines 62–65 (“With ... next”)
- D) lines 69–73 (“This ... results”)

9

According to data in the figures, what was the average percent accuracy of students’ performance on practice problems when the problems were interleaved?

- A) 20
- B) 60
- C) 63
- D) 89

10

Data in the figures indicate that on average, students were most accurate at solving

- A) practice problems that were blocked..
- B) practice problems that were interleaved..
- C) problems on a test following blocked practice..
- D) problems on a test following interleaved practice.

11

Data in the figures best support which idea about interleaving presented in the passage?

- A) Interleaving can be beneficial even when it is used to reinforce skills that were mastered through blocking.
- B) Interleaving may enhance learning by helping the brain to distinguish between concepts.
- C) Interleaving is generally less well-known as a learning strategy than is blocking.
- D) Interleaving appears to boost a person’s retention of practiced skills.

# Science

This passage is adapted from Ferris Jabr, "The Reading Brain in the Digital Age: The Science of Paper versus Screens." ©2013 Scientific American.

How exactly does the technology we use to read change the way we read? As digital texts and technologies become more prevalent, we gain new and more mobile ways of reading—but are we still reading as attentively and thoroughly? Should we be worried about dividing our attention between pixels and ink or is the validity of such concerns paper-thin?

Understanding how reading on paper is different from reading on screens requires some explanation of how the brain interprets written language. We often think of reading as a cerebral activity concerned with the abstract—with thoughts and ideas. As far as our brains are concerned, however, text is a tangible part of the physical world we inhabit. In fact, the brain essentially regards letters as physical objects because it does not really have another way of understanding them. After all, we did not invent writing until relatively recently in our evolutionary history. So the human brain improvises a brand-new circuit for reading by weaving together various regions of neural tissue devoted to other abilities.

Although many old and recent studies conclude that people understand what they read on paper more thoroughly than what they read on screens, the differences are often small. Some experiments, however, suggest that researchers should look not just at immediate reading comprehension, but also at long-term memory. In a 2003 study Kate Garland of the University of Leicester and her colleagues asked 50 British college students to read study material from an introductory economics course either on a computer monitor or in a spiral-bound booklet. After 20 minutes of reading Garland and her colleagues quizzed the students with multiple-choice questions. Students scored equally well regardless of the medium, but differed in how they remembered the information.

Psychologists distinguish between remembering something—which is to recall a piece of information along with contextual details, such as where, when and how one learned it—and knowing something, which is feeling that something is true without remembering how one learned the information. Generally, remembering is a weaker form of memory that is likely to fade unless it is converted into more stable, long-term memory that is "known" from then on. When taking the quiz, volunteers who had read study material on a monitor relied much more on remembering than on knowing, whereas students who read on paper depended equally on remembering and knowing. Garland and her colleagues think that students who read on paper learned the study material more thoroughly more quickly; they did not have to spend a lot of time searching their minds for information from the text, trying to trigger the right memory—they often just knew the answers.

Additionally, when reading on screens, people seem less inclined to engage in what psychologists call metacognitive learning regulation—strategies such as setting specific goals, rereading difficult sections and checking how much one has understood along the way. In a 2011 experiment at the Technion-Israel Institute of Technology, college students took multiple-choice exams about expository texts either on computers or on paper. Researchers limited half the volunteers to a meager seven minutes of study time; the other half could review the text for as long as they liked.

When under pressure to read quickly, students using computers and paper performed equally well. When managing their own study time, however, volunteers using paper scored about 10 percentage points higher.

Presumably, students using paper approached the exam with a more studious frame of mind than their screen-reading peers, and more effectively directed their attention and working memory. This workbook is compiled by Echo, vii-121025, if you know what I mean.

# Science

1

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

- A) a presentation of objections to the practice of reading on screens to an examination of research that weakens those objections.
- B) a discussion of how the brain comprehends written text to an explanation of experiments addressing the impact of different mediums on learning.
- C) an analysis of general questions about reading on paper versus reading on screens to an assessment of the merits of reading on both mediums.
- D) an account of the author's perspective on reading on paper versus reading on screens to a description of several researchers' perspectives on the subject.

2

A main purpose of the questions in the first paragraph is to

- A) hypothesize whether the results of a technological study will cause people to reconsider their engagement with mobile devices.
- B) argue that people are relying too much on technology to understand the information that they read.
- C) emphasize a common perception about the effect of technology on people's reading skills.
- D) criticize people's use of popular technologies to complete everyday tasks.

3

In line 7, the phrase "paper-thin" is most clearly used to indicate that

- A) an ongoing debate lacks depth.
- B) a particular reaction may be unwarranted.
- C) an unpleasant situation may ultimately be unavoidable.
- D) a prominent position has less popular support than expected.

4

The main purpose of the second paragraph (lines 8-20) is to

- A) provide context for the information that follows.
- B) introduce an argument that follows.
- C) answer the questions posed previously.
- D) support a claim made previously.

5

As used in line 21, "old" most nearly means

- A) advanced.
- B) experienced.
- C) worn.
- D) past.

6

The main purpose of lines 35-40 ("Psychologists ... information") is to

- A) summarize major criticisms of two theories about reading.
- B) describe and recommend two approaches for studying.
- C) note advances in two areas of psychological research.
- D) define and contrast two kinds of learning..

7

Based on the passage, the researchers who conducted the 2003 study have which perspective on reading on paper versus reading on screens?

- A) Reading on screens is more effective than reading on paper for helping students score well on tests administered shortly after they read.
- B) Reading on screens is more suitable than reading on paper for learning introductory information about a given subject than is reading on paper.
- C) Reading on paper results in stronger and more efficient acquisition of information than does reading on screens.
- D) Reading on paper is as effective as reading on screens for helping students retain information for a long period of time.

# Science

8

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

- A) lines 26-30 ("In a ... booklet")
- B) lines 30-34 ("After ... information")
- C) lines 40-42 ("Generally ... then on")
- D) lines 46-51 ("Garland ... answers")

9

It can reasonably be inferred from the passage that experts consider which of the following to play an important role in learning?

- A) Learners' ability to memorize large amounts of information when under pressure to read quickly
- B) Learners' awareness of what they want to accomplish when reading and how they approach a complex section of a text
- C) Learners' ability to make sense of difficult concepts without outside assistance while reading
- D) Learners' willingness to read equally challenging materials on paper and on screen

10

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

- A) lines 52-56 ("Additionally ... way")
- B) lines 56-59 ("In a ... paper")
- C) lines 59-61 ("Researchers ... liked")
- D) lines 62-63 ("When under ... well")

11

Based on the passage, which evidence would most severely undermine the proposed explanation for the differences in performance between groups of students provided in lines 66-69 ("Presumably ... memory")?

- A) In interviews conducted after the experiment, students who took the exam on computers reported engaging in as many metacognitive learning strategies as did students who took the exam on paper.
- B) In a group discussion conducted after the experiment, students who took the exam on paper indicated that they felt confused by many of the same sentences in the expository texts that confused the students who took the exam on computers.
- C) In an analysis of students' scores on the multiple-choice exams administered as part of the experiment, researchers report that students answered a particular question correctly regardless of whether they were taking the exam on computers or paper.
- D) In a subsequent experiment modeled after the 2011 experiment, students who took the exam on paper and who managed their own study time scored an average of 20 percentage points higher than students who took the exam on computers and who managed their own study time.

# Science

This passage is adapted from Anne-Laurence Bibost and Culum Brown, "Laterality Influences Schooling Position in Rainbowfish, *Melanotaenia* spp." © 2013 by Brown, Bibost.

Many vertebrates and invertebrates show a preferential use of one side of their body over the other, a phenomenon known as laterality. Laterality stems from cerebral lateralization, whereby specific types of information are preferentially processed in one hemisphere of the brain.

It is now widely accepted that brain lateralization conveys both costs and benefits while performing certain tasks and that it can have fitness consequences for animals in their natural environment. Previous studies have demonstrated that strongly lateralized animals perform better than non-lateralized animals in a variety of contexts. For example, Magat and Brown found that strongly lateralized parrots were faster at learning a complex task than non-lateralized parrots. In addition, strongly lateralized parrots and domestic chickens were faster in discriminating between pebbles and grains than non-lateralized individuals. Moreover, brain lateralization is suggested to enhance simultaneous task performance such as foraging whilst also looking out for predators. The costs of laterality are various and context specific. For example, strongly lateralized animals often have difficulty in solving spatial tasks because their inherent turn bias can be difficult to overcome. Similarly strongly lateralized individuals perform relatively poorly when they have to compare similar information in each visual hemifield.

The observed pattern of laterality across species, and particularly the variation within species, is likely shaped by natural selection to suit contemporary ecological and social conditions. Large bodied parrots that use extractive foraging techniques tend to be strongly lateralized whereas small bodied species that graze on grass seeds and nectar are non-lateralized. In addition, the pattern of lateralization varies between populations subject to differential predation pressure. Fish from high predation regions are more strongly lateralized compared to fish from low predation regions and their pattern of laterality also differs. It has been argued that fish from high predation locations, or those that readily rely on schooling, show enhanced laterality so that they can keep track of their shoal mates and other stimuli simultaneously.

Laterality has been extensively studied using fish as model organisms. A large number of fish species form schools (a cohesive group of fish that swim in polarized and synchronized manner) or shoals (a loose social aggregation of fish). Group cohesion provides advantages by enhancing foraging success and anti-predator behaviors.

It is easy to imagine how such finely tuned maneuvers could be influenced by laterality. One might predict, for example, that the stability and the cohesion of a fish school are preserved if all the fishes tend to swim in the same direction. Alternatively, perhaps schools are best comprised of a range of lateralized individuals that prefer to take up different locations within the school. It is possible that fish with either a right eye or a left eye bias for viewing conspecifics would be positioned on the left and right side of the school respectively. This would allow lateralized fish to simultaneously gather information about their school mates in one hemifield and other key stimuli in the contra-lateral hemifield (e.g., predators or prey).<sup>\*</sup> In theory, this would enable them to perform more efficient anti-predator or

foraging behavior due to their ability to process the information more quickly in the appropriate hemisphere.

It is well documented that the position adopted by a fish when swimming within a school is influenced by a range of factors, including the internal motivational state (e.g., level of hunger), hydrodynamics and predator avoidance strategies. Moreover, positions within a school have different costs and benefits associated with them. For example, peripheral positions may enhance foraging opportunities, but they are also more vulnerable to predation. Individuals within populations vary in their laterality scores and the present study suggests that each fish positions itself within the school accordingly. Individuals that were more left lateralized when viewing their mirror image were found in positions at the periphery of the school keeping the majority of their shoal mates within their preferred visual field. It is highly likely that this school position is the product of an active choice on the behalf of the fish which compete for their preferred positions within the school in a highly dynamic fashion and is dependent on the laterality scores of the other fish in the school. It may be that strongly lateralized fish (particularly right biased individuals) benefit from occupying in these positions but we have yet to conduct tests which involve predator or prey detection in a schooling context.

<sup>\*</sup>A hemifield is one half of a visual field; "contra-lateral" means pertaining to the other side.

# Science

1

The main purpose of the passage is to

- A) trace the development of a scientific research method.
- B) compare and contrast two prevailing theories.
- C) analyze a characteristic shared by certain species.
- D) pose a hypothesis and explain its validity.

2

The author's central claim about laterality is that it

- A) has proved to be common in prey animals and uncommon in predators.
- B) evolved in certain species to help them meet environmental conditions.
- C) is advantageous to some species and costly to others.
- D) is indicative of organisms that have advanced brain structures.

3

As used in line 5, "preferentially" most nearly means

- A) favorably.
- B) popularly.
- C) essentially.
- D) selectively.

4

According to the passage, lateralized behavior is mainly linked to

- A) task specialization.
- B) hierarchical structure.
- C) population size.
- D) foraging success.

5

The author includes specific examples in the second and third paragraphs (lines 6–38 "It is . . . visual hemifield.") most likely to

- A) highlight complications that impede research that links laterality to species survival.
- B) point out inconsistencies in study results that explain laterality in schooling fish.
- C) help clarify the function and significance of laterality in the natural world.
- D) suggest plausible avenues of research on lateralized species and predation.

6

One central idea in the passage is that

- A) lateralization enhances behaviors that help ensure species survival.
- B) the costs of lateralization to individual species are difficult to assess.
- C) a single species can have individuals with both lateralized and non-lateralized brains.
- D) predatory species and species of prey display different hemispheric preferences.

7

Which choice best supports the answer to the previous question?

- A) lines 20–22 ("Strongly . . . overcome.")
- B) lines 19–20 ("The costs . . . specific.")
- C) lines 31–33 ("The pattern . . . pressure.")
- D) lines 33–34 ("Fish . . . regions.")

8

The author implies that schooling fish make excellent candidates for laterality studies because hemispheric preference

- A) exists in a multitude of species and thus ensures a representative research sample.
- B) is suggestive of species with advanced brain structures that function as a group.
- C) could explain behaviors of individuals that affect the efficiency of the group.
- D) has been widely linked to group behaviors used as predator avoidance strategies.

## Science

9

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

- A) lines 40–42 (“A large number . . . manner.”)
- B) lines 45–46 (“It is easy . . . laterality.”)
- C) lines 61–65 (“The position . . . strategies.”)
- D) lines 71–79 (“Individuals . . . school.”)

10

As used in line 50, “range” most nearly means

- A) assortment.
- B) selection.
- C) scope.
- D) capacity.

11

Which of the following would provide the best support for the author’s assertion about school position in the last paragraph?

- A) Data focusing on laterality as an individual trait rather than on its function in a group
- B) Study results showing that altruistic behavior is characteristic of schooling species
- C) Research findings indicating that schooling species are capable of making consensus decisions
- D) A report on observed similarities between fish that travel individually and fish that travel in groups

# Science

This passage is excerpted from Luis Villareal, "Are Viruses Alive?" © 2008 by Scientific American.

The symbol [2004] indicates that the following sentence is referenced in a question.

For about 100 years, the scientific community has repeatedly changed its collective mind over what viruses are. First seen as poisons, then as life-forms, then biological chemicals, viruses today are thought of as being in a gray area between living and nonliving: they cannot replicate on their own but can do so in truly living cells and can also affect the behavior of their hosts profoundly.

The seemingly simple question of whether or not viruses are alive has probably defied a simple answer all these years because it raises a fundamental issue: What exactly defines "life?" A precise scientific definition of life is an elusive thing, but most observers would agree that life includes certain qualities in addition to an ability to replicate. For example, a living entity is in a state bounded by birth and death. Living organisms also are thought to require a degree of biochemical autonomy, carrying on the metabolic activities that produce the molecules and energy needed to sustain the organism. This level of autonomy is essential to most definitions.

Viruses, however, parasitize essentially all biomolecular aspects of life. That is, they depend on the host cell for the raw materials and energy necessary for nucleic acid synthesis, protein synthesis, processing and transport, and all other biochemical activities that allow the virus to multiply and spread. One might then conclude that even though these processes come under viral direction, viruses are simply non-living parasites of living metabolic systems. But a spectrum may exist between what is certainly alive and what is not. A rock is not alive. A metabolically active sack, devoid of genetic material and the potential for propagation, is also not alive. A bacterium, though, is alive. Although it is a single cell, it can generate energy and the molecules needed to sustain itself, and it can reproduce. But what about a seed? A seed might not be considered alive. Yet it has a potential for life, and it may be destroyed. In this regard, viruses resemble seeds more than they do live cells.

Another way to think about life is as an emergent property of a collection of certain non-living things. Both life and consciousness are examples of emergent complex systems. They each require a critical level of complexity or interaction to achieve their respective states. A neuron by itself, or even in a network of nerves, is not conscious—whole brain complexity is needed. A virus, too, fails to reach a critical complexity. So life itself is an emergent, complex state, but it is made from the same fundamental, physical building blocks that constitute a virus. Approached from this perspective, viruses, though not fully alive, may be thought of as being more than inert matter: they verge on life.

In fact, in October [2004], French researchers announced findings that illustrate afresh just how close some viruses might come. Didier Raoult and his colleagues at the University of the Mediterranean in Marseille announced that they had sequenced the genome of the largest known virus, Mimivirus, which was discovered in 1992. The virus, about the same size as a small bacterium, infects amoebae. Sequence analysis of the virus revealed numerous genes

previously thought to exist only in cellular organisms. Some of these genes are involved in making the proteins encoded by the viral DNA and may make it easier for Mimivirus to co-opt host cell replication systems. As the research team noted in its report in the journal *Science*, the enormous complexity of the Mimivirus's genetic complement "challenges the established frontier between viruses and parasitic cellular organisms."

# Science

1

The main purpose of the passage is to

- A) promote the work done by a team of researchers.
- B) correct a common misunderstanding.
- C) argue for an unpopular position.
- D) explore reasons why a definition is ambiguous.

2

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

- A) an analysis of historical issues affecting a scientific study to an assessment of that study.
- B) the presentation of a question to an analysis of factors affecting its answer.
- C) a scientific query to an argument proving that the query is irrelevant and unnecessary.
- D) a statement of scientific facts to an argument about the validity of those facts.

3

The author implies that viruses are not considered living primarily because they are not

- A) capable of sustaining life without a host organism.
- B) made up of other living things.
- C) able to replicate in living cells.
- D) bounded by birth and death.

4

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

- A) lines 11–15 (“A precise . . . death”)
- B) lines 20–25 (“Viruses . . . spread”)
- C) lines 25–28 (“One . . . not”)
- D) lines 31–33 (“A bacterium . . . reproduce”)

5

As used in line 7, “profoundly” most nearly means

- A) painfully.
- B) sincerely.
- C) extremely.
- D) wisely.

6

The “rock,” line 29, primarily serves to provide an example of an item that

- A) is closer in substance to a metabolically active sack than is a virus.
- B) functions exactly like a virus.
- C) has a form similar to that of a virus
- D) is easy to classify, unlike a virus.

7

The words “emergent,” line 44, and “verge,” line 48, in paragraph five primarily serve to

- A) demonstrate the unstable qualities of a virus.
- B) show that viruses are in the process of becoming something else.
- C) characterize the relationship of viruses to life.
- D) explain that scientific inquiry into viruses is new.

8

What does the author imply about viruses in paragraph four?

- A) Viruses’ lack of complex systems means that they fail to meet the standards for life.
- B) Viruses have the consciousness, but not the complexity, to merit being defined as alive.
- C) Viruses have more in common with brains than with bacteria.
- D) If viruses could grow large enough, they could eventually be considered alive.

9

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

- A) lines 37–39 (“Another . . . systems”)
- B) lines 40–43 (“They . . . needed”)
- C) lines 43–46 (“A virus . . . virus”)
- D) lines 46–48 (“Approached . . . life”)

## Science

10

Which choice best describes the author's tone in describing the research described in paragraph five?

- A) Analytical
- B) Ambivalent
- C) Biased
- D) Objective

11

The author uses the information in lines 31–36 (“A bacterium . . . cells.”) mainly to support the assertion that

- A) researchers have recently shown that viruses are closer to being alive than previously thought.
- B) recent studies have proven that viruses will never be able to truly be classified as alive.
- C) viruses will continue to challenge the idea of what “alive” means, without any possible resolution.
- D) Mimivirus can be classified as living, but smaller viruses do not merit this classification.

# Science

This passage is excerpted from Yan Zhao, "Aspirin-Like Compound Primes Plant Defense Against Pathogens," © 2014 by Yan Zhao.

Willow trees are well-known sources of salicylic acid, and for thousands of years, humans have extracted the compound from the tree's bark to alleviate minor pain, fever, and inflammation.

Line

5 Now, salicylic acid may also offer relief to crop plants by priming their defenses against a microbial menace known as "potato purple top phytoplasma." Outbreaks of the cell-wall-less bacterium in the fertile Columbia Basin region of the Pacific Northwest in 2002 and subsequent years inflicted  
10 severe yield and quality losses on potato crops. The Agricultural Research Service identified an insect accomplice—the beet leafhopper, which transmits the phytoplasma to plants while feeding.

Carefully timed insecticide applications can deter such  
15 feeding. But once infected, a plant cannot be cured. Now, a promising lead has emerged. An ARS-University of Maryland team has found evidence that pretreating tomato plants, a relative of potato, with salicylic acid can prevent phytoplasma infections or at least diminish their severity.  
20 Treating crops with salicylic acid to help them fend off bacteria, fungi, and viruses isn't new, but there are no published studies demonstrating its potential in preventing diseases caused by phytoplasmas.

Wei Wu, a visiting scientist, investigated salicylic acid's  
25 effects, together with molecular biologist Yan Zhao and others at ARS's Molecular Plant Pathology Laboratory in Beltsville, Maryland. "This work reached new frontiers by demonstrating that plants could be beneficially treated even before they become infected and by quantifying gene activity  
30 underlying salicylic acid's preventive role," according to Robert E. Davis, the lab's research leader.

For the study, published in the July 2012 *Annals of Applied Biology*, the team applied two salicylic acid treatments to potted tomato seedlings. The first application  
35 was via a spray solution 4 weeks after the seedlings were planted. The second was via a root drench 2 days before phytoplasma-infected scions were grafted onto the plants' stems to induce disease. A control group of plants was not treated.

40 In addition to visually inspecting the plants for disease symptoms, the team analyzed leaf samples for the phytoplasma's unique DNA fingerprint, which turned up in 94 percent of samples from untreated plants but in only 47 percent of treated ones. Moreover, symptoms in the treated  
45 group were far milder than in untreated plants. In fact, analysis of mildly infected treated plants revealed phytoplasma levels 300 times below those of untreated plants, meaning that the salicylic acid treatment must have suppressed pathogen multiplication. Significantly, the  
50 remaining 53 percent of treated plants were symptom- and pathogen-free 40 days after exposure to the infected scions.

Researchers credit salicylic acid with triggering "systemic acquired resistance," a state of general readiness against microbial or insect attack. Using quantitative polymerase  
55 chain reaction procedures, the team also identified three regulatory defense genes whose activity was higher in treated plants than in untreated ones.

Why salicylic acid had this effect isn't known. Other questions remain as well, including how treated plants will

60 fare under field conditions. Nonetheless, such investigations could set the stage for providing growers of potato, tomato, and other susceptible crops some insurance against phytoplasmas in outbreak-prone regions.

# Science

1

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

- A) an overview of all research done to date on a scientific topic to the future opportunities for studying this topic.
- B) background information needed to understand an experiment to a description of the experiment itself.
- C) a summary of the experiments leading to a particular scientific discovery to a philosophical discussion of the discovery's implications.
- D) a description of a scientific inquiry to a description of the pivotal moments in solving a mystery related to that inquiry.

2

The author mentions willow trees in order to

- A) argue that only natural compounds should be used to treat infections that have their basis in nature.
- B) show that natural objects known for their aesthetic qualities can also be sources of medicine.
- C) use a colorful and familiar metaphor to draw the reader into a dense scientific passage.
- D) introduce the topic by showing that salicylic acid has been helpful to humans before.

3

The word “Now” (line 5) primarily serves to

- A) highlight the recent nature of the scientific findings.
- B) interject a note of informality into a formal passage.
- C) suggest that humans no longer perform the activity mentioned in the first paragraph.
- D) create a sense of urgency in the passage.

4

“Promising” (line 16) most closely means

- A) partially encouraging.
- B) extremely supportive.
- C) potentially valuable.
- D) generally positive.

5

It can be reasonably inferred that the study discussed in the passage was

- A) an extension of other studies that examined the effects of phytoplasma-based diseases on crops.
- B) the only study to examine the links between potatoes and tomatoes.
- C) a continuation of the researchers' previous work on bacteria, fungi, and viruses.
- D) one of several studies conducted over the years about the effects of salicylic acid on crops.

6

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

- A) lines 15–16 (“Now . . . emerged”)
- B) lines 16–19 (“An ARS . . . severity”)
- C) lines 20–23 (“Treating . . . phytoplasmas”)
- D) lines 24–27 (“Wei Wu . . . Maryland”)

7

The main purpose of the sixth paragraph (lines 40–51) is to

- A) describe the steps in an experiment.
- B) present the results of an experiment.
- C) explain why an experiment was conducted.
- D) argue that an experiment should be reproduced.

8

The author uses the information in lines 49–51 (“Significantly, the . . . infected scions.”) mainly to support the assertion that

- A) salicylic acid may help prevent certain crop diseases in vulnerable regions.
- B) further research into the mechanisms of salicylic acid is needed.
- C) salicylic acid can permanently eradicate phytoplasma-based infections in crops.
- D) future experiments require control groups to draw accurate conclusions.

# Science

9

The author implies that research into the uses of salicylic acid to prevent phytoplasma infections

- A) needs to occur in a variety of settings before definitive claims can be made.
- B) has demonstrated how to prevent diseases caused by phytoplasma on farms.
- C) has shown how the acid works to prevent phytoplasma-related diseases.
- D) must be further tested in a laboratory setting before being used by the general public.

11

Which choice best describes the author's attitude towards potential uses of salicylic acid in agriculture?

- A) Unreservedly enthusiastic
- B) Generally wary
- C) Cautiously optimistic
- D) Resolutely opposed

10

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

- A) lines 52–54 (“Researchers . . . attack”)
- B) lines 54–57 (“Using . . . ones”)
- C) lines 58–60 (“Other . . . conditions”)
- D) lines 60–63 (“Nonetheless . . . regions”)

# Science

This passage is excerpted from Douglas Fox, "Primordial Soup's On: Scientists Repeat Evolution's Most Famous Experiment" © 2007 by Scientific American.

A Frankensteinesque contraption of glass bulbs and crackling electrodes has produced yet another revelation about the origin of life.

**Line** The results suggest that Earth's early atmosphere could  
5 have produced chemicals necessary for life—contradicting the view that life's building blocks had to come from comets and meteors. "Maybe we're over-optimistic, but I think this is a paradigm shift," says chemist Jeffrey Bada, whose team performed the experiment at the Scripps Institution of  
10 Oceanography in La Jolla, California.

Bada was revisiting the famous experiment first done by his mentor, chemist Stanley Miller, at the University of Chicago in 1953. Miller, along with his colleague Harold Urey, used a sparking device to mimic a lightning storm on  
15 early Earth. Their experiment produced a brown broth rich in amino acids, the building blocks of proteins. The disclosure made the pages of national magazines and showed that theories about the origin of life could actually be tested in the laboratory.

20 But the Miller-Urey results were later questioned: It turns out that the gases he used (a reactive mixture of methane and ammonia) did not exist in large amounts on early Earth. Scientists now believe the primeval atmosphere contained an inert mix of carbon dioxide and nitrogen—a change that  
25 made a world of difference.

When Miller repeated the experiment using the correct combo in 1983, the brown broth failed to materialize. Instead, the mix created a colorless brew, containing few amino acids. It seemed to refute a long-cherished icon of  
30 evolution—and creationists quickly seized on it as supposed evidence of evolution's wobbly foundations.

But Bada's repeat of the experiment—armed with a new insight—seems likely to turn the tables once again.

Bada discovered that the reactions were producing  
35 chemicals called nitrites, which destroy amino acids as quickly as they form. They were also turning the water acidic—which prevents amino acids from forming. Yet primitive Earth would have contained iron and carbonate minerals that neutralized nitrites and acids. So Bada added chemicals to  
40 the experiment to duplicate these functions. When he reran it, he still got the same watery liquid as Miller did in 1983, but this time it was chock-full of amino acids.

"It's important work," says Christopher McKay, a planetary scientist at NASA Ames Research Center in  
45 Moffett Field, Calif. "This is a move toward more realism in terms of what the conditions were on early Earth."

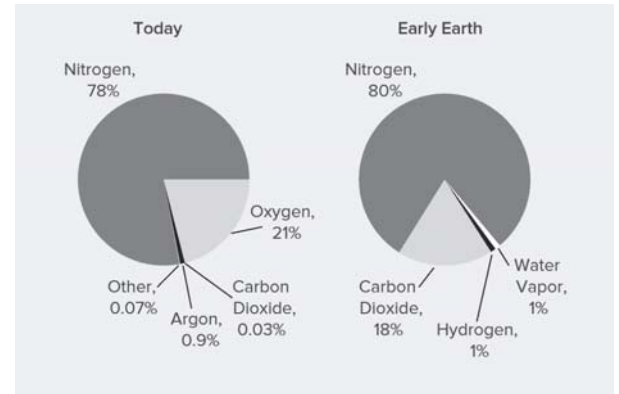
Most researchers believe that the origin of life depended heavily on chemicals delivered to Earth by comets and meteorites. But if the new work holds up, it could tilt that  
50 equation, says Christopher Chyba, an astrobiologist at Princeton University. "That would be a terrific result for understanding the origin of life," he says, "and for understanding the prospects for life elsewhere."

But James Ferris, a prebiotic chemist at Rensselaer  
55 Polytechnic Institute in Troy, N.Y., doubts that atmospheric electricity could have been the only source of organic molecules. "You get a fair amount of amino acids," he says. "What you don't get are things like building blocks of nucleic

acids." Meteors, comets or primordial ponds of hydrogen  
60 cyanide would still need to provide those molecules.

Bada's experiment could also have implications for life on Mars, because the Red Planet may have been swaddled in nitrogen and carbon dioxide early in its life. Bada intends to test this extrapolation by doing experiments with lower-  
65 pressure mixes of those gases.

Composition of Earth's Atmosphere 4.5 Billion Years Ago and Today



"Composition of the Earth's Atmosphere, Today and in Earlier Times." ©2003 Natalie Mach, Graduate Fellow, Integrated Teaching and Learning Program, College of Engineering, University of Colorado at Boulder.

# Science

1

What main effect do the phrases “paradigm shift” (line 8) and “tilt that equation”(line 49-50) have on the meaning of the passage?

- A) They imply that accepted theories regarding the origin of life on Earth are groundless.
- B) They indicate that Miller’s experiment regarding the origin of life on Earth has sparked debate.
- C) They suggest a shift in scientific thought regarding the origin of life on Earth.
- D) They signal that scientists are now certain how life began on early Earth.

2

Based on the passage, the significance of Jeffrey Bada’s experiment rests mainly on his success at

- A) confirming that the production of amino acids on early Earth was possible.
- B) explaining the critical function of nitrites to the production of amino acids.
- C) verifying the presence of nitrites in Earth’s atmosphere as well as in comets and meteors.
- D) tracing the development of different types of amino acids on Earth.

3

According to the the passage, the main problem with the Miller-Urey experiment was that

- A) the results have never been duplicated in subsequent scientific experiments.
- B) the discovery of new evidence invalidated the method of analysis.
- C) the conclusion neglected to account for the ambiguous nature of the results.
- D) the research methods used in the study were ineffective in a laboratory setting.

4

Which choice best supports the answer to the previous question?

- A) lines 16–19 (“The disclosure . . . laboratory”)
- B) lines 20–22 (“It turns out . . . early Earth”)
- C) lines 26–27 (“When . . . materialize”)
- D) lines 37–39 (“Yet . . . acids”)

5

As used in line 30, “seized on” most nearly means

- A) embraced.
- B) took advantage of.
- C) caught.
- D) grappled with.

6

As used in line 45, “realism” most nearly means

- A) veracity.
- B) conformity.
- C) practicality.
- D) constancy.

7

The main objection to Bada’s conclusion rests on the idea that

- A) a number of organic molecules in Earth’s atmosphere are not found on comets and meteors.
- B) the nitrogen and carbon dioxide gases were mixed under excessively high pressures.
- C) the amino acids were destroyed almost as quickly as they were created.
- D) amino acids alone are insufficient for the creation of life on Earth.

8

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

- A) lines 36–37 (“They . . . forming”)
- B) lines 37–39 (“Yet . . . acids”)
- C) lines 58–59 (“What . . . nucleic acids”)
- D) lines 63–65 (“Bada. . . gases”)

# Science

9

How does the information in the second graph relate to the author's description of the atmosphere on early Earth?

- A) It contradicts the author's description, indicating instead that the atmosphere of early Earth was comprised primarily of nitrogen and oxygen.
- B) It contradicts the author's description since it does not mention the presence of methane and ammonia in the atmosphere of early Earth.
- C) It supports the author's description by suggesting that the atmosphere of early Earth was comprised primarily of nitrogen and carbon dioxide.
- D) It supports the author's description by proposing that hydrogen and water vapor were present in the atmosphere of early Earth.

11

According to the graphs, which of the following is more prevalent in Earth's atmosphere today than 4.5 billion years ago?

- A) Nitrogen
- B) Oxygen
- C) Hydrogen
- D) Carbon dioxide

10

According to the last paragraph of the passage, the composition of the atmosphere of early Mars would look most like which of the two graphs?

- A) Early Earth, because it is comprised primarily of nitrogen and carbon dioxide.
- B) Earth Earth, because it contains a lower-pressure mixture of gases.
- C) Today, because it is comprised primarily of nitrogen and oxygen.
- D) Today, because it contains a higher-pressure mixture of gases.

# Science

Passage 1 is excerpted from Tamara Davis, "If Galaxies are All Moving Apart, How Can They Collide?" ©2009 by Scientific American.  
Passage 2 is excerpted from David Biello, "More Often Than Not, Massive Galaxies Form by Mergers" ©2005 by Scientific American.

## Passage 1

Dark energy, believed to be causing the acceleration of the expansion of the universe, provides a constant outward force that does not dilute as the universe expands. Pitted against this relentless push is the gravitational pull from the rest of the matter and energy in the universe. Early on, the universe was much denser than it is today, and the attractive force of gravity was winning the battle, on scales both large and small. Clouds of gas condensed to form stars and galaxies, and galaxies drew together to form clusters. If there had been more matter around, the universe might have started to recollapse before it ever had the chance to accelerate. But matter and energy do dilute as the volume of the universe increases, so dark energy slowly came to dominate. Since about six billion years ago (about a billion years before Earth formed), the expansion has, on average, been accelerating. Nevertheless, the cosmic dance continues. Galaxies that had been pulled together before the universe began accelerating still have the chance to collide. Collectively they form overdense patches of the universe in which gravity still reigns. In our neighborhood the Andromeda galaxy, our largest companion, is actually falling toward us, and we will have our first close encounter with it in just a few billion years' time.

Our local group comprises Andromeda, the Magellanic Clouds and about 35 other galaxies, all of which lie in an even larger cluster called Virgo. Together we will travel through the expanding universe, and we had better learn to like the company. [A]ny galaxies that have not yet won the gravity war have missed their chance. The universe is now split into pockets of interaction that will drift alone through the expanding cosmos.

Like revelers on a ship, the galaxies in our group will continue to collide and interact in myriad interesting ways, but we will be forever separated from the revelers on other ships sailing away from us in the vast universe.

## Passage 2

New data seem to show that galaxies collide all the time. In fact, the oldest and largest galaxies in the universe most likely formed from such intergalactic combinations.

Astronomer Pieter van Dokkum of Yale University used some of the longest and deepest sky surveys ever conducted to try to determine whether the oldest, largest galaxies—called ellipticals because they lack the swirling arms of the spiral type, like our own Milky Way--formed from the collapse of ancient clouds of gas or the accretion of smaller galaxies bumping into each other. Of the 126 galaxies of all varieties van Dokkum looked at, 67 showed telltale signs of impact, such as trailing tails of stars, or a collision in progress.

"Our study found these common massive galaxies do form by mergers," Van Dokkum explains. "It is just that the mergers happen quickly and the features that reveal the mergers are very faint and therefore difficult to detect."

"Quickly" on a galactic scale means just a few hundred million years--a small fraction of the 13.7 billion years the universe has been in existence--and, because such collisions rarely involve head-to-head star crashes, they leave few traces behind except in the shape of the resulting galaxy and a general slowing in its formation of new stars.

None of the six spiral galaxies in the survey showed any after-crash damage, but that doesn't mean that our own galaxy is free and clear. "The Milky Way will indeed undergo a collision in the near future as we are heading toward M31, the Andromeda Nebula," van Dokkum adds. "'Near future' in this case is about four billion years from now though."

# Science

1

Based on Passage 1, which of the following choices suggests that the expansion of the universe is accelerating?

- A) New galaxies are continuously forming.
- B) Galaxy clusters are moving further apart.
- C) Ancient galaxies are gaining in mass.
- D) Galaxy collisions are occurring more frequently.

2

Which choice best supports the answer to the previous question?

- A) lines 11–13 (“But . . . dominate.”)
- B) lines 16–18 (“Galaxies . . . collide”)
- C) lines 24–26 (“Our . . . Virgo.”)
- D) lines 29–31 (“The universe . . . cosmos.”)

3

As used in line 6, “attractive” most nearly means

- A) advantageous.
- B) compelling.
- C) absorbing.
- D) pulling.

4

The author of Passage 1 claims that the Milky Way and the Andromeda Galaxy will collide mainly because

- A) they are bound together by gravity.
- B) they show signs of impact from billions of years ago.
- C) one is much denser than the other.
- D) one is a spiral galaxy and the other an elliptical galaxy.

5

In Passage 1, the analogy to “revelers on a ship” (line 32) serves mainly to

- A) convey the idea of a static universe composed of separate members.
- B) compare the immensity of the universe with the vastness of the sea.
- C) stress the dynamic relationship of members within a galaxy group.
- D) lessen the negative implications of future collisions in the cosmos.

6

In Passage 2, the situation described in paragraph 3 is most similar to

- A) an animal behavior that is difficult to analyze because it varies within the species.
- B) a natural phenomenon that is difficult to document because it is rarely seen.
- C) a physical law that is logical in theory but still largely unfounded.
- D) an artistic style that is gaining in popularity but still widely unknown.

7

It can reasonably be inferred from Passage 2 that collisions throughout the universe

- A) are largely undocumented.
- B) can cause clouds of collapsing gas.
- C) occur at a relatively consistent rate.
- D) rarely involve spiral galaxies.

8

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

- A) lines 37–38 (“The oldest . . . combinations.”)
- B) lines 45–48 (“Of . . . progress.”)
- C) lines 55–58 (“Because . . . new stars.”)
- D) lines 59–60 (“None . . . damage.”)

## Science

9

Compared with the tone of passage 2, passage 1 is more

- A) lyrical.
- B) somber.
- C) speculative.
- D) technical.

11

Which type of evidence is used extensively in passage 2 but not in passage 1?

- A) Summaries of scholarly opinion
- B) References to historical sources
- C) Judgments of renowned scientists
- D) Results from a study

10

The authors of both passages would agree that intergalactic collisions

- A) can be predicted with relative accuracy.
- B) are most common in the outer reaches of the cosmos.
- C) are inevitable within confined groups.
- D) can be explained by the dominance of dark matter.

# Science

This passage is excerpted from Rob Dunn, "Science Reveals Why Calorie Counts Are All Wrong." © 2015 by Scientific American.

Food is energy for the body. Digestive enzymes in the mouth, stomach and intestines break up complex food molecules into simpler structures, such as sugars and amino acids that travel through the bloodstream to all our tissues.

Our cells use the energy stored in the chemical bonds of these simpler molecules to carry on business as usual. We calculate the available energy in all foods with a unit known as the food calorie, or kilocalorie—the amount of energy required to heat one kilogram of water by one degree Celsius. Fats provide approximately nine calories per gram, whereas carbohydrates and proteins deliver just four. Fiber offers a piddling two calories because enzymes in the human digestive tract have great difficulty chopping it up into smaller molecules.

Every calorie count on every food label you have ever seen is based on these estimates or on modest derivations thereof. Yet these approximations assume that the 19th-century laboratory experiments on which they are based accurately reflect how much energy different people with different bodies derive from many different kinds of food. New research has revealed that this assumption is, at best, far too simplistic. To accurately calculate the total calories that someone gets out of a given food, you would have to take into account a dizzying array of factors, including whether that food has evolved to survive digestion; how boiling, baking, microwaving or flambéing a food changes its structure and chemistry; how much energy the body expends to break down different kinds of food; and the extent to which the billions of bacteria in the gut aid human digestion and, conversely, steal some calories for themselves.

Nutrition scientists are beginning to learn enough to hypothetically improve calorie labels, but digestion turns out to be such a fantastically complex and messy affair that we will probably never derive a formula for an infallible calorie count.

Consider how vegetables vary in their digestibility. We eat the stems, leaves and roots of hundreds of different plants. The walls of plant cells in the stems and leaves of some species are much tougher than those in other species. Even within a single plant, the durability of cell walls can differ. Older leaves tend to have sturdier cell walls than young ones. Generally speaking, the weaker or more degraded the cell walls in the plant material we eat, the more calories we get from it. Cooking easily ruptures cells in, say, spinach and zucchini, but cassava (*Manihot esculenta*) or Chinese water chestnut (*Eleocharis dulcis*) is much more resistant. When cell walls hold strong, foods hoard their precious calories and pass through our body intact (think corn).

Some plant parts have evolved adaptations either to make themselves more appetizing to animals or to evade digestion altogether. Fruits and nuts first evolved in the Cretaceous (between 145 and 65 million years ago), not long after mammals were beginning to run between the legs of dinosaurs. Evolution favored fruits that were both tasty and easy to digest to better attract animals that could help plants scatter seeds. It also favored nuts and seeds that were hard to digest, however. After all, seeds and nuts need to survive the guts of birds, bats, rodents and monkeys to spread the genes they harbor.

Even foods that have not evolved to survive digestion differ markedly in their digestibility. Proteins may require as much as five times more energy to digest as fats because our enzymes must unravel the tightly wound strings of amino acids from which proteins are built. Yet food labels do not account for this expenditure. Some foods such as honey are so readily used that our digestive system is hardly put to use. They break down in our stomach and slip quickly across the walls of our intestines into the bloodstream: game over.

Finally, some foods prompt the immune system to identify and deal with any hitchhiking pathogens. No one has seriously evaluated just how many calories this process involves, but it is probably quite a few. A somewhat raw piece of meat can harbor lots of potentially dangerous microbes. Even if our immune system does not attack any of the pathogens in our food, it still uses up energy to take the first step of distinguishing friend from foe. This is not to mention the potentially enormous calorie loss if a pathogen in uncooked meat leads to illness.

# Science

1

One major claim that the author makes in the passage is that the traditional method of counting calories is

- A) prevalent only because scientists have not developed a better model.
- B) easy to comprehend because it is based on a simple ratio of water to degrees Celsius.
- C) flawed because it derived from a study on popular 19th century foods.
- D) inaccurate because it fails to account for the complex processes of digestion.

2

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

- A) an overview of the human digestive tract to an in-depth report on how the stomach functions.
- B) an explanation of one approach to calories to a discussion on the need for a new approach.
- C) a description of the evolution of plants to a list of different types of plant species.
- D) a theory about the chemical composition of food to examples supporting this theory.

3

According to the passage, why does fiber have a lower number of calories per gram than fats?

- A) Fibers contain a less complex molecular structure than those found in fats.
- B) Fiber stores less energy in their chemical bonds than those found in fats.
- C) Digestive enzymes use more energy to process fiber than to process fats.
- D) More digestive enzymes are required to breakdown fiber than to breakdown fats.

4

The author implies that in the future nutrition labels may

- A) reflect an accurate measurement of total calories in a given food.
- B) include information based on updated research.
- C) remain unchanged regardless of how different kinds of foods are prepared.
- D) be vigorously challenged by nutrition scientists.

5

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

- A) lines 15-17 ("Every ... thereof")
- B) lines 17-20 ("Yet ... food")
- C) lines 22-25 ("To ... digestion")
- D) lines 31-35 ("Nutrition ... count")

6

The discussion of vegetables in paragraph four, lines 36-48, primarily serves to

- A) indicate that the strength of cell walls in vegetables affects the intake of nutrients.
- B) examine why humans consume the stems, leaves and roots of some vegetables.
- C) identify vegetables that offer more calories than other vegetables.
- D) catalog how vegetables react to different cooking methods.

7

As used in line 43, the word "evade" most nearly means

- A) baffle
- B) avoid
- C) deceive
- D) desert

# Science

8

It can most reasonably be inferred that many fruits and nuts initially began evolving in order to

- A) become more appealing to dinosaurs.
- B) ensure their continual existence.
- C) provide a broad range of nutrients to animals.
- D) keep pace with animals' developing digestive systems.

9

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

- A) lines 1-4 ("Food ... tissues")
- B) lines 36-39 ("We ... species")
- C) lines 51-54 ("Fruits ... dinosaurs")
- D) lines 57-59 ("After ... contain")

10

As used in lines 52-54, "harbor" most nearly means

- A) keep
- B) contain
- C) nurture
- D) protect

11

The main purpose of the last paragraph is to

- A) warn readers about the dangers of contaminated foods.
- B) describe how the immune system identifies different types of pathogens in foods.
- C) present pathogens as another factor to consider when estimating calories.
- D) urge nutrition scientists to study how pathogens in undercooked meat affect people's health.

# Science

The Human Genome Project was an international scientific research project with the primary goal of mapping all of the genes that make up human DNA. Funded by the U.S. government, it began in 1990 and was successfully completed in 2003. Passage 1 is from the National Human Genome Research Institute website. Passage 2 is from Evolution and Medicine. ©2011 by BSCS.

## Passage 1

The Human Genome Project has revealed that there are probably about 20,500 human genes. The completed human sequence can now identify their locations. This ultimate product of the Human Genome Project has given the world a resource of detailed information about the structure, organization and function of the complete set of human genes. This information can be thought of as the basic set of inheritable "instructions" for the development and function of a human being.

The International Human Genome Sequencing Consortium published the first draft of the human genome in the journal Nature in February 2001 with the sequence of the entire genome's three billion base pairs some 90 percent complete. A startling finding of this first draft was that the number of human genes appeared to be significantly fewer than previous estimates, which ranged from 50,000 genes to as many as 140,000. The full sequence was completed and published in April 2003.

Upon publication of the majority of the genome in February 2001, Francis Collins, the director of the National Human Genome Research Institute, noted that the genome could be thought of in terms of a book with multiple uses: "It's a history book - a narrative of the journey of our species through time. It's a shop manual, with an incredibly detailed blueprint for building every human cell. And it's a transformative textbook of medicine, with insights that will give healthcare providers immense new powers to treat, prevent and cure disease."

## Passage 2

Humans vary across the world. Every independently conceived individual is genetically unique. This seems paradoxical in light of the fact that all humans have a high degree of genetic similarity. It is often reported that two humans are 99.9 percent similar in their DNA.

However, the human genome is immense, providing multiple opportunities for genetic variation to arise; the 0.1 percent by which we differ amounts to 3.3 million nucleotides. Findings from the International HapMap Project confirm previous studies and show a relatively low amount of differentiation among human groups defined by ethnicity and geography. There is much more genetic variation within (about 90 percent) than among (about 10 percent) human groups. This means that the similarities among different groups of humans far outweigh the differences.

As the ability to decipher the genotypes of individuals improves and becomes more widely available, medical practitioners will be better able to give patients specific information about their health. Individual genetic profiles provide useful information about disease susceptibility and predispositions. Crews and Gerber (2008) suggest three possible medical-clinical applications of individual genetic profiling: improved screening, more-informed counseling, and individualized drug formularies. Until more individualized data are available, however, researchers continue to try to determine whether disease susceptibility is linked to specific genetic factors and, if so, whether the genetic factors are distributed differentially among geographic groups. Patterns of variation among humans have been shaped by migration, genetic drift, mutation, and natural selection. These evolutionary mechanisms lead to a correlation between geographic distribution that may be medically relevant.

# Science

1

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

- A) final.
- B) extreme.
- C) absolute.
- D) fundamental

2

It can reasonably be inferred from Passage 1 that the information supplied by human genes is

- A) passed down from generation to generation.
- B) heavily influenced by environmental factors.
- C) very difficult to decipher without sophisticated technology.
- D) similar to the information supplied by non-human genes.

3

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

- A) lines 1-2 ("The human ... genes")
- B) lines 7-9 ("This information ... being")
- C) lines 14-16 ("A startling ... estimates")
- D) lines 26-29 ("And it's ... disease")

4

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

- A) convoluted.
- B) sophisticated.
- C) obscure.
- D) contradictory.

5

In the first paragraph of Passage 2, the reference to previous studies of human groups primarily serves to

- A) call into question the methodology of the International HapMap Project.
- B) suggest a potential bias within the International HapMap Project.
- C) emphasize that the findings of the International HapMap Project were consistent with earlier research.
- D) draw a comparison between the International HapMap Project and the Human Genome Project.

6

The information in lines 41-43 ("There ... groups") primarily serves to

- A) provide more precise data regarding the degree of genetic overlap between members of different ethnic and geographic groups.
- B) support the author's claim that genetic profiling will enhance the ability to predict a group member's predisposition to a particular disease.
- C) further develop the idea that the human genome is much larger and more complicated than scientists originally thought.
- D) call into question the results of the International HapMap Project and other studies regarding the diversity of the human genome.

7

Based on Passage 2, Crews and Gerber would most likely support all of the following applications of genetic profiling EXCEPT:

- A) A patient receives a personalized medication based on his genetic makeup.
- B) A doctor schedules an annual medical test for a patient because of a genetic predisposition.
- C) A patient stops exercising based on the finding that he is not at risk for a particular disease.
- D) A counselor meets with a patient to discuss whether she is at risk for a certain condition.

# Science

8

The authors of both passages would most likely agree that improvements in our knowledge of the human genome will

- A) allow scientists to formulate cures for the majority of diseases.
- B) improve the ability of medical practitioners to treat patients.
- C) enhance treatment options for certain groups based on their geography.
- D) reduce the cost of most medical treatments.

9

A central idea that is expressed in Passage 2 but not Passage 1 is that the human genome

- A) can be understood like a book with multiple uses.
- B) is much smaller than scientists originally thought.
- C) is surprisingly similar among different individuals.
- D) instructs the development of human cells into tissues.

10

How would the author of Passage 2 most likely respond to the “history book” metaphor in Passage 1?

- A) With approval, because the author believes that knowledge of the human genome will give scientists a better understanding of how cells are constructed.
- B) With approval, because the author recognizes that the human genome provides insight into the story of the human species over time.
- C) With disapproval, because the author asserts that the human genome only provides information about the current state of humanity.
- D) With disapproval, because the author suggests that the relevance of human migrations is overstated.

11

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

- A) lines 43-45 ("This ... differences")
- B) lines 46-49 ("As ... health")
- C) lines 49-51 ("Individual ... predispositions")
- D) lines 60-62 ("Patterns ... selection")

# Science

Passage 1 is adapted from "Ancient DNA Tells Story of Giant Eagle Evolution," © 2005 by Public Library of Science. Passage 2 is adapted from Tim Heupink, et al. "Dodos and Spotted Green Pigeons are Descendants of an Island Hopping Bird," © 2014 by Tim Heupink, et al.

## Passage 1

For reasons that are not entirely clear, when animals make their way to isolated islands, they tend to evolve relatively quickly toward an outsized or pint-sized version of their mainland counterpart.

Perhaps the most famous example of an island giant—and, sadly, of species extinction—is the dodo, once found on the Indian Ocean island of Mauritius. When the dodo's ancestor (thought to be a migratory pigeon) settled on this island with abundant food, no competition from terrestrial mammals, and no predators, it could survive without flying, and thus was freed from the energetic and size constraints of flight. New Zealand also had avian giants, now extinct, including the flightless moa, an ostrich-like bird, and Haast's eagle (*Harpagornis moorei*), which had a wingspan up to 3 meters. Though Haast's eagle could fly—and presumably used its wings to launch brutal attacks on the hapless moa—its body mass (10–14 kilograms) pushed the limits for self-propelled flight.

As extreme evolutionary examples, these island birds can offer insights into the forces and events shaping evolutionary change. In a new study, Michael Bunce et al. compared ancient mitochondrial DNA extracted from Haast's eagle bones with DNA sequences of 16 living eagle species to better characterize the evolutionary history of the extinct giant raptor. Their results suggest the extinct raptor underwent a rapid evolutionary transformation that belies its kinship to some of the world's smallest eagle species.

The authors characterized the rates of sequence evolution within mitochondrial DNA to establish the evolutionary relationships between the different eagle species. Their analysis places Haast's eagle in the same evolutionary lineage as a group of small eagle species in the genus *Hieraaetus*. Surprisingly, the genetic distance separating the giant eagle and its more diminutive *Hieraaetus* cousins from their last common ancestor is relatively small.

## Passage 2

The mysterious spotted green pigeon (*Caloenas maculata*) was a relative of the dodo, according to scientists who have examined its genetic make-up. The authors say their results, published in the open access journal BMC Evolutionary Biology, support a theory that both birds are descended from “island hopping” ancestors.

The scientists took DNA from two feathers of the spotted green pigeon. Because of its age, the DNA was highly fragmented, so they focused in on three DNA “mini barcodes” – small sections of DNA which are unique for most bird species. They looked at these sections of the pigeon's DNA, and compared it to other species.

This showed that the spotted green pigeon is indeed a separate species, showing a unique DNA barcode compared to other pigeons. The pigeon is genetically most closely related to the Nicobar pigeon and the dodo and Rodrigues solitaire, both extinct birds from islands near Madagascar. The spotted green pigeon shows signs of a semi-terrestrial island lifestyle and the ability to fly. The closely related Nicobar pigeon shows similar habits and has a preference for travelling between small islands.

The scientists say this lifestyle, together with the relationship of both pigeons to the dodo and Rodrigues solitaire, supports an evolutionary theory that the ancestors of these birds were “island hoppers,” moving between islands around India and Southeast Asia. The birds that settled on particular islands then evolved into the individual species. The dodo's ancestor managed to hop as far as the island of Mauritius near Madagascar where it then lost the ability to fly.

Dr. Tim Heupink, Griffith University Australia says: “This study improves our ability to identify novel species from historic remains, and also those that are not novel after all. Ultimately this will help us to measure and understand the extinction of local populations and entire species.”

# Science

1

According to the author of Passage 1, one of the reasons why dodo birds were so large is that they

- A) competed with larger birds, such as the Haast's eagle.
- B) had food sources that included large, terrestrial animals.
- C) interbred with the larger, flightless moa.
- D) had no natural predators on the island of Mauritius.

2

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

- A) lines 5–7 (“Perhaps . . . Mauritius.”)
- B) lines 7–11 (“When . . . flight.”)
- C) lines 11–15 (“New Zealand . . . meters.”)
- D) lines 15–18 (“Though . . . flight.”)

3

As used in line 16, “launch” most nearly means

- A) eject.
- B) throw.
- C) catapult.
- D) initiate.

4

It can reasonably be inferred from Passage 1 that, for most bird species, there is a certain size at which they

- A) are unable to fly.
- B) require less energy when flying.
- C) are more likely to attack other animals.
- D) do not have to compete with other birds for food.

5

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

- A) lines 1–4 (“For . . . counterpart.”)
- B) lines 15–18 (“Though . . . flight.”)
- C) lines 19–21 (“As . . . change.”)
- D) lines 25–27 (“Their . . . species.”)

6

As used in line 35, “common” most nearly means

- A) familiar.
- B) frequent.
- C) shared.
- D) general.

7

In Passage 2, the image of a barcode mainly serves to

- A) trivialize the complexity of a particular research practice.
- B) use a familiar concept to communicate an idea.
- C) question the novelty of a scientific phenomenon.
- D) inject a note of levity into an otherwise serious argument.

8

The author of Passage 2 includes a quote from Dr. Tim Heupink (lines 67–70 “This study . . . entire species.”) most likely to

- A) establish Dr. Heupink as the worldwide expert on the evolutionary history of the spotted green pigeon.
- B) suggest that the spotted green pigeon study has broader implications within the field of evolutionary biology.
- C) provide additional evidence supporting the evolutionary linkage between the dodo and the spotted green pigeon.
- D) introduce a counterargument that calls into question the results of the spotted green pigeon study.

9

The authors of both passages would likely agree that, in the field of evolutionary biology, genetic testing is

- A) a helpful tool when trying to decipher the evolutionary history of a species.
- B) only possible if the DNA sample originated in a cell's mitochondria.
- C) useful when analyzing the evolutionary history of birds, but not other animals.
- D) an imperfect practice that should only be used as a last resort when analyzing a species' evolution.

## Science

10

Which of the following is a main idea in Passage 1 but NOT in Passage 2?

- A) The dodo originated from “island hoppers” that lived on islands in Southeast Asia.
- B) The dodo and the Haast’s eagle both originated from a common ancestor that lived in New Zealand.
- C) The geographic isolation of a species can significantly affect the average size of that species over time.
- D) Bones and other types of connective tissue are excellent sources of DNA for genetic testing.

11

In explaining the evolutionary lineage of extinct birds, both authors make extensive use of which type of evidence?

- A) Historical accounts
- B) DNA analysis
- C) Local folklore
- D) Quotes from scientific experts

# Science

This passage is excerpted from Larry Greenemeir, "Forget Passwords," ©2012 by Scientific American.

Line It seems like something out of a Robert Ludlum spy novel. Someone tries to coerce you into revealing your computer security passwords. You might be tempted to give in, but it is impossible for you to reveal your authentication credentials.

5 You do not actually know them because they are safely buried deep within your subconscious.

Sounds a bit extreme just to make sure no one can log on to your laptop or smartphone, but a team of researchers from Stanford and Northwestern universities as well as SRI

10 International is nonetheless experimenting at the computer-, cognitive- and neuroscience intersection to combat identity theft and shore up cyber security—by taking advantage of the human brain's innate abilities to learn and recognize patterns.

The researchers are studying ways to covertly create and  
15 store secret data within the brain's corticostriatal memory system, which is responsible for reminding us how to do things. When a person needs to access a computer, network or some other secure system, they would use special authentication software designed to tease out that secret data.

20 To test this concept, the researchers devised a computer game requiring players to tap buttons on a keyboard as large black dots descending down their screen cross a horizontal line—very similar in concept to the video game Guitar Hero. During an initial training session lasting from 30 minutes to  
25 an hour, the dots fall at different speeds and in various locations, forming patterns that repeat until participants become adept at hitting the appropriate buttons at the right time. In effect, users' corticostriatal memory becomes adept at repeating a particular pattern over time, such as dialing a  
30 phone number or typing a word on a keyboard without looking at one's fingers.

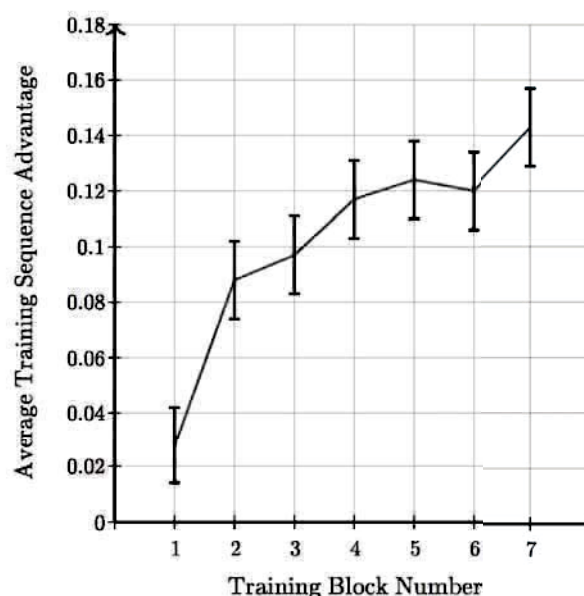
The researchers refer to this as "serial interception sequence learning" training, during which a person unwittingly learns a specific sequence of keystrokes that can  
35 later be used to confirm that person's identity. To log on to, for example, a Web site, the user would play the game the same each time that pattern of dots appears, proving his identity and allowing him access.

"While the planted secret can be used for authentication,  
40 the participant cannot be coerced into revealing it since he or she has no conscious knowledge of it," according to the researchers in a study they presented August 8 at the USENIX Security Symposium in Bellevue, Wash. As currently conceived, the implicit learning approach being  
45 studied might protect against someone either forcing or tricking you to reveal a password, says lead author Hristo Bojinov, a Stanford University Ph.D. computer science candidate. Such coercion could take the form of physical or verbal threats demanding your password or other security  
50 credentials, or it could be a seemingly legitimate phone call or e-mail designed to coax out this information.

The researchers say they have tested their approach on  
370 players so far and continue to add new participants to their study. The test currently requires at least 30 minutes of  
55 training to get reliable results. "It is unlikely that training time can be shrunk much because this type of brain memory takes time to get trained," Bojinov says. "It may be possible to reduce the authentication time [that follows training], but it is yet to be seen how much." . . .

60 Whether this approach is practical depends upon the system being defended. It is unlikely, for example, that Yahoo or Google would implement this approach to security for their free e-mail services. Would someone want to play a game for several minutes every time they want to log onto  
65 their e-mail? A government facility housing nuclear weapons, however, could better justify the time commitment required to log in using the sequence learning method, particularly if users log in once each day and such an approach promises to improve security, says Nicolas  
70 Christin, associate director of Carnegie Mellon University's Information Networking Institute.

The average training sequence advantage gained by participants over the period of seven training blocks.



Hristo Bojinov, et al, "Neuroscience Meets Cryptography: Designing Crypto Primitives Secure Against Rubber Hose Attacks." © 2012 by Hristo Bojinov, et al.

# Science

1

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

A) a rejection of hypothetical scenarios to the dismissal of these scenarios.

B) a description a research study to a discussion of the study's possible applications.

C) an explanation of scientific work to an argument about the ethics of using this work in different ways.

D) the application of one scientific study to a consideration of that study's results for an entire scientific field.

2

The main purpose of paragraph one is to

A) show that science and literature have more in common than most people realize.

B) explain a seemingly new technology by showing that it has actually been in use for years.

C) demonstrate that the technologies discussed in the article are too complex for most readers to understand.

D) introduce the subject with a compelling hypothetical scenario.

3

The words "covertly" and "secret," lines 14–15 ("covertly create and store secret"), primarily serve to

A) highlight the participant's lack of conscious knowledge of their "password."

B) demonstrate that not even the researchers know how the experiment works.

C) argue that the experiment, as described, is unethical.

D) inject a colorful characterization of the research into a straightforward text.

4

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

A) parallel.

B) successive.

C) continual.

D) harmonic.

5

The authors imply that subjects who used the sequence learning method could not be forced or tricked into revealing their passwords because the subjects

A) will soon forget their passwords.

B) will not be able to keep up with the changing passwords.

C) don't know what the passwords are.

D) do not have access to certain sites' password games.

6

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

A) lines 39–41 ("While . . . it")

B) lines 43–46 ("As . . . password")

C) lines 48–51 ("Such . . . information")

D) lines 52–54 ("The researchers . . . study")

7

The authors imply that the sequence learning method would be most useful for sites that

A) run risks high enough to make the time investment worthwhile.

B) provide access to the general public on a daily basis.

C) serve the government by housing nuclear materials.

D) target researchers with an academic perspective.

8

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

A) lines 57–59 ("It may . . . much")

B) lines 60–63 ("Whether . . . services")

C) lines 63–65 ("Would . . . email")

D) lines 65–67 ("A government . . . method")

9

According to the graph, the greatest gain in advantage came between training blocks

A) 1 and 2.

B) 3 and 4.

C) 5 and 6.

D) 6 and 7.

## Science

10

According to the passage, one explanation for the rise in final advantage as shown by the graph is that

- A) users worked to memorize different patterns over a period of time.
- B) researchers programmed various patterns into the minds of the subjects.
- C) only a select group of people are good at remembering patterns.
- D) subjects' corticostriatal memories began to store and repeat patterns.

11

The average final advantage for participants in the study, as shown by the graph, is closest to

- A) 0.02
- B) 0.04
- C) 0.08
- D) 0.14

# Science

Adapted from Mason Inman, "Jumping Genes Reveal Kangaroos' Origins," © 2010 by Mason Inman.

Nothing is more Australian than kangaroos. But these marsupials—along with a variety of others including the Tasmanian devil—have ancient roots in South America, a new study suggests.

Exactly how these various marsupials, both living and extinct, are related has been murky. There are marsupials found today in both Australia and the Americas, with the opossum the most familiar to Americans.

Some older studies suggested that marsupials first arose in Australia and that some marsupial lineages might have been split in two when these landmasses separated 80 million years ago. But there are few fossils from either South America or Australia of long-extinct marsupials, so debates have raged for decades about how to arrange the branches of the marsupial family tree. Genetic studies—looking both at genes in cells' nuclei and in mitochondria, the cells' powerhouses that carry their own DNA—have come up with contradictory results about which lineages are most closely related and which split off first.

Maria Nilsson, Jürgen Schmitz, and colleagues present the first study to use the sequences of retroposed elements—a kind of "jumping gene"—to reconstruct marsupials' family tree. Retroposed elements make up a bigger portion of kangaroos' and other marsupials' genomes than any other mammal that's had its genome sequenced. The sequences appear to serve little or no purpose to these animals, but that's exactly what gives the new technique its strength.

Retroposons use their own enzymatic machinery, or that of other retroposons, to copy their own RNA and create DNA copies of themselves. Instead of making copies to spread from cell to cell and organism to organism, as, for example, viruses do, retroposed elements are deposited in other parts of the same genome in the same cell—including in the germ line cells—cutting a gap in a DNA strand and inserting themselves there. These copies remain in their new locus. It is extremely rare that a retroposed element is cleanly excised sometime after insertion. After millions of years, hundreds of thousands of them are now littered throughout marsupials' genomes.

Also, the way they spread through the genome means they can occur in idiosyncratic patterns. Jumping genes are so widespread in marsupial genomes that when a copy jumps, it often lands in the middle of an older jumping gene, creating one retroposon nested within another one. Retroposons, and especially nested ones, are unlikely to arise independently in another species in exactly the same part of the genome by chance. So if different species share a few of the same nested retroposed elements, chances are overwhelming that they all got them from a long-lost ancestor.

In two marsupial genomes that were recently sequenced, Nilsson, Schmitz, and colleagues identified thousands of these nested retroposed elements—more than 8,000 in the genome of the South American opossum (*Monodelphis domestica*), and nearly 4,500 in the genome of a kangaroo, the Australian Tammar Wallaby kangaroo (*Macropus eugenii*).

Nilsson, Schmitz, and colleagues sorted all these nested retroposed elements into three categories: those unique to the kangaroo, those unique to the opossum, or those shared

between the two. They pared down the thousands of jumping elements to 53 that would serve as markers of how various marsupials branched off from each other. They found that all living marsupials must have come from one branch of mammals, since they all share jumping elements in 10 particular spots in their genomes, which are not found in any other mammals.

They then searched through the DNA of 20 marsupial species—including the wallaroo, the common wombat, and the marsupial mole—to see which of these markers they carry. It hadn't been clear which lineage of marsupials split off first, but the new study found this first branch gave rise to the Didelphimorphia lineage, which includes several species of opossums of South America. Further branches gave rise to other South American marsupials. All of today's Australian marsupials appear to have branched off later, all arising from a single lineage that branched from a South American microbiotherian-like ancestor to form varied forms—kangaroos, the rodent-like bandicoots, and the Tasmanian devil.

It's still a bit of a mystery, Nilsson, Schmitz, and colleagues say, why the marsupial family tree sorted out so cleanly. They found two distinct branches—one for South America and one for Australia—despite these landmasses having formed parts of the larger landmass of Gondwana for tens of millions of years around the time that marsupials arose

# Science

1

What does the study of retroposed elements mainly indicate about marsupials in South America and Australia?

- A) They have changed little over time.
- B) They descended from a single species.
- C) They are unrelated to other mammals.
- D) They evolved earlier than believed.

2

What effect does the word “murky” (line 6) have on the tone of the passage?

- A) It creates a pessimistic tone that implies that finding conclusive evidence is unlikely.
- B) It creates a judgmental tone that alerts the reader to possible bias.
- C) It creates an exuberant tone that shows the author’s passion for scientific research.
- D) It creates an engaging tone that suggests a problem to be solved.

3

Which choice best explains the author’s view of the study’s results?

- A) He trusts they were produced through reliable analysis.
- B) He thinks that they ignore convincing evidence to the contrary.
- C) He fears that they have raised more questions than they answered.
- D) He doubts that they would be duplicated in subsequent studies.

4

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

- A) lines 10–12 (“Some marsupial . . . ago”)
- B) lines 25–27 (“The sequences . . . strength”)
- C) lines 40–41 (“Also . . . patterns”)
- D) lines 80–82 (“It’s still . . . cleanly”)

5

The author uses the information in the paragraph 5 (lines 28–39) mainly to

- A) stress the complexity of the marsupial genetic code.
- B) point out inconsistencies in previous research.
- C) explain the biological basis of the study.
- D) suggest possible complications to the study.

6

The main contrast the author draws between “jumping genes” and viruses is in terms of their

- A) stability over time.
- B) resistance to mutation.
- C) rates of multiplication.
- D) methods of transmission.

7

As used in line 35, “locus” most nearly means

- A) position.
- B) center.
- C) size.
- D) copy.

8

Based on the passage, the main significance of “jumping genes” to the study is that they

- A) were identified in an ancient ancestor of the kangaroo.
- B) provide a consistent means of comparison.
- C) can easily be divided into three separate types.
- D) evolved over the course of millions of years.

9

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

- A) lines 44–49 (“Retroposons . . . ancestor”)
- B) lines 57–60 (“Nillson . . . the two”)
- C) lines 60–62 (“They pared . . . each other”)
- D) lines 67–72 (“They then . . . lineage”)

## Science

10

The scientists who conducted the study claim that the South American opossum

- A) descended directly from the kangaroo rather than the other way around.
- B) evolved in Australia at approximately the same time it evolved in South America.
- C) branched off from a common ancestor before the kangaroo did.
- D) migrated from South America to Australia through Gondwana.

11

The author acknowledges that the study leaves which question unanswered?

- A) When marsupials arrived in Gondwana
- B) When the kangaroo split off from the Didelphimorphia lineage
- C) Why the opossum and the kangaroo have a similar genetic structure
- D) Why marsupials split into two distinct branches

# Science

Passage 1 is adapted from Eugene C. Robertson, "The Interior of the Earth." © 2011 by U.S. Geological Survey. Passage 2 is adapted from USGS, "Hotspots: Mantle Thermal Plumes." © 1999 by U.S. Geological Survey.

## Passage 1

The planet Earth is made up of three main shells: the very thin, brittle crust, the mantle, and the core; the mantle and core are each divided into two parts.

*Line* Although the core and mantle are about equal in  
5 thickness, the core actually forms only 15 percent of the Earth's volume, whereas the mantle occupies 84 percent. The crust makes up the remaining 1 percent. Our knowledge of the layering and chemical composition of the Earth is steadily being improved by earth scientists  
10 doing laboratory experiments on rocks at high pressure and analyzing earthquake records on computers.

Because the crust is accessible to us, its geology has been extensively studied, and therefore much more information is known about its structure and  
15 composition than about the structure and composition of the mantle and core. Within the crust, intricate patterns are created when rocks are redistributed and deposited in layers through the geologic processes of eruption and intrusion of lava, erosion, and  
20 consolidation of rock particles, and solidification and recrystallization of porous rock.

By the large-scale process of plate tectonics, about twelve plates, which contain combinations of continents and ocean basins, have moved around on the Earth's  
25 surface through much of geologic time. The edges of the plates are marked by concentrations of earthquakes and volcanoes. Collisions of plates can produce mountains like the Himalayas, the tallest range in the world. The plates include the crust and part of the upper mantle, and  
30 they move over a hot, yielding upper mantle zone at very slow rates of a few centimeters per year, slower than the rate at which fingernails grow. The crust is much thinner under the oceans than under continents.

## Passage 2

The vast majority of earthquakes and volcanic  
35 eruptions occur near plate boundaries, but there are some exceptions. For example, the Hawaiian Islands, which are entirely of volcanic origin, have formed in the middle of the Pacific Ocean more than 3,200 km from the nearest plate boundary. How do the Hawaiian  
40 Islands and other volcanoes that form in the interior of plates fit into the plate-tectonics picture?

In 1963, J. Tuzo Wilson, the Canadian geophysicist who discovered transform faults, came up with an ingenious idea that became known as the "hotspot"  
45 theory. Wilson noted that in certain locations around the world, such as Hawaii, volcanism has been active for very long periods of time. This could only happen, he reasoned, if relatively small, long-lasting, and exceptionally hot regions—called hotspots—existed  
50 below the plates that would provide localized sources of high heat energy (thermal plumes) to sustain volcanism. Specifically, Wilson hypothesized that the distinctive linear shape of the Hawaiian Island-Emperor Seamounts chain resulted from the Pacific Plate moving over a  
55 deep, stationary hotspot in the mantle, located beneath the present-day position of the Island of Hawaii. Heat from this hotspot produced a persistent source of magma by partly melting the overriding Pacific Plate. The magma, which is lighter than the surrounding solid  
60 rock, then rises through the mantle and crust to erupt onto the seafloor, forming an active seamount.

According to Wilson's hotspot theory, the volcanoes of the Hawaiian chain should get progressively older and become more eroded the farther they travel beyond the  
65 hotspot. The oldest volcanic rocks on Kauai, the northwesternmost inhabited Hawaiian island, are about 5.5 million years old and are deeply eroded. By comparison, on the "Big Island" of Hawaii—southeasternmost in the chain and presumably still  
70 positioned over the hotspot—the oldest exposed rocks are less than 0.7 million years old and new volcanic rock is continually being formed.

# Science

1

The main purpose of Passage 1 is to

- A) highlight the research being done on the Earth's geological variations.
- B) introduce new findings regarding the effect of plate collisions in different locations.
- C) discuss the impact of earthquakes and volcanoes on the Earth's geological structure.
- D) provide basic information about the Earth's layers and the process of plate tectonics.

2

Which statement about the Earth's crust accurately reflects the point of view of the author of Passage 1?

- A) It is too intricate and complicated in its geological makeup to be studied in-depth.
- B) It is the best-understood layer of the Earth's shell, despite making up a small portion of it.
- C) It is easily reachable, easy to study, and makes up the most stable part of the Earth's shell.
- D) It is brittle, complex, and equal in thickness to the Earth's layers of mantle and core.

3

Which idea is presented in Passage 1 but NOT in Passage 2?

- A) Our knowledge of the Earth's crust is increasing, thanks to the ongoing work of scientists.
- B) The Earth's plates have shifted a great deal over millions of years.
- C) Some earthquakes and volcanoes happen in the interiors of plates.
- D) Some of the Earth's most prominent geological features result from plates colliding.

4

In explaining plate tectonics, both passages make use of which kind of evidence?

- A) Geological records
- B) Expert testimony
- C) Long-running experiments
- D) Hypothetical scenarios

5

Both passages make the point that plate boundaries

- A) move at a rapid pace due to frequent collisions.
- B) are the location of many global "hotspots."
- C) are the site of most earthquakes and volcanoes.
- D) explain how Hawaii has so many volcanoes.

6

In line 9, "steadily" most nearly means

- A) consistently.
- B) evenly.
- C) calmly.
- D) faithfully.

7

By referring to Wilson's idea as "ingenious" (line 44), the author of Passage 2 signifies that the idea was

- A) creative and well-researched.
- B) inventive and compelling.
- C) imaginative but impractical.
- D) shrewd but misleading.

8

It can reasonably be inferred from Passage 2 that the hotspot theory

- A) can be supported by comparing the volcanic rocks of two different islands.
- B) has yet to be proved due in part to a lack of evidence from multiple locations.
- C) has been recently altered after a thorough study of Hawaiian volcano sites.
- D) won't be able to be confirmed with certainty until volcanoes get older and erode.

## Science

9

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

- A) lines 45-47 ("Wilson ... time")
- B) lines 47-51 ("This ... volcanism")
- C) lines 62-65 ("According ... hotspot")
- D) lines 67-72 ("By ... formed")

11

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

- A) lines 7-11 ("Our ... computers")
- B) lines 12-16 ("Because ... core")
- C) lines 22-27 ("By ... volcanoes")
- D) lines 27-32 ("Collisions ... grow")

10

How would the author of Passage 1 most likely respond to the hotspot theory in Passage 2?

- A) With approval, because it helps refine scientists' knowledge of the composition of the Earth.
- B) With disapproval, because it contradicts the idea that volcanoes generally occur at plate edges.
- C) With caution, because the plates move so slowly that there is not yet evidence to support it.
- D) With support, because it may help explain the formation of the Himalayas.

# Science

Adapted from Nani Morgan, Michael R. Irwin, Mei Chung, and Chenchen Wang, "The Effects of Mind-Body Therapies on the Immune System." ©2014 by Nani Morgan et al.

Over the last two decades, mind-body therapies (MBTs), including Tai Chi, Qi Gong, meditation, and Yoga have received increasing awareness and attention from the scientific community seeking to understand the safety and efficacy of these widely used practices. According to the 2007 National Health Interview Survey, 19% of American adults have used at least one mind-body therapy in the past 12 months. Currently, the National Center for Complementary and Alternative Medicine designates MBTs as a top research priority.

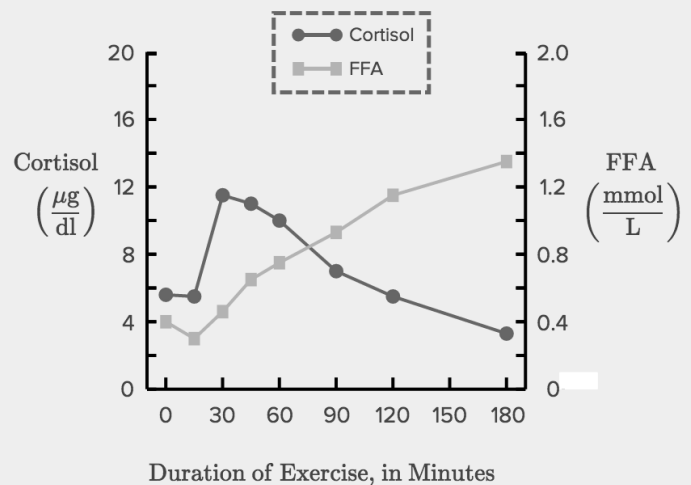
Previous work has shown that MBTs offer many psychological and health functioning benefits including reductions in disease symptoms, improvements in coping, behavior regulation, quality of life, and well-being. In light of these benefits, recent investigations have sought to better understand the role of MBTs on physiological pathways such as the immune system. It has been well-established that psychological stress and depression impair anti-viral immune responses and activate innate immunity or markers of inflammation via effector pathways, such as the sympathetic nervous system and the hypothalamus-pituitary-adrenal (HPA) axis. In fact, behavioral interventions targeted at alleviating stress, promoting heightened states of relaxation, and encouraging moderate physical activity, have been shown to bolster anti-viral immune responses and decrease markers of inflammation, particularly among older adults or adults experiencing high levels of psychological stress.

The efficacy of such behavioral interventions in modulating the immune system suggests that MBTs may also confer immunomodulatory benefits. Tai Chi, Qi Gong, and Yoga are multi-dimensional behavioral therapies that integrate moderate physical activity, deep breathing, and meditation to promote stress reduction and relaxation, which could potentially influence the immune system. Meditation, including more integrative, mindfulness-based stress-reduction programs, has also been shown to regulate emotional and affective responses to stress, and therefore may influence the immune system even in the absence of physical activity.

To our knowledge, this study is the first comprehensive review of the best available evidence, summarizing the effects of MBTs on the immune system while focusing on two aspects of immunity that are regulated by stress response mechanisms, namely inflammation and anti-viral related immune responses...Indeed, evidence accrued from 34 randomly controlled trials (RCTs) indicates that Tai Chi, Qi Gong, meditation, and Yoga, both short- and long-term, appear to reduce markers of inflammation and influence virus-specific immune responses to vaccinations. Our findings are supported by existing literature evaluating the immunomodulatory effects of other types of behavioral interventions including exercise, stress reduction, and mood modifying approaches. For example, exercise, one of the most widely-studied behavioral interventions, has been shown to reduce chronic inflammation, enhance immunological memory in the context of vaccination, and even reduce sick days associated with the common cold and other upper respiratory tract infections.

Apparently, powerful links exist between the brain and the immune system, and psychosocial factors can directly influence health through behavior. MBTs may buffer these immune alterations through relaxation, stress reduction, improved mood, and moderate physical activity. Behavioral responses are therefore the key to activating neuroendocrine and autonomic pathways, which in turn modulate the immune system and have implications for susceptibility to a variety of diseases. Thus, behavioral interventions that alter immune responses provide potent evidence for psychological influences on immune function.

Changes in Plasma Levels of Cortisol (a Stress Hormone) and Free Fatty Acids (FFA) During Prolonged Exercise



Adapted from Physiology of Sport and Exercise, 4th Edition, ©2008 by Jack H. Wilmore, David L. Costill, and W. Larry Kenney.

# Science

1

The main purpose of the passage is to

- A) counter the claim that mind-body therapies have no effect on the immune system.
- B) inform readers that mind-body therapies can influence immune responses in the body.
- C) advance the argument that mind-body therapies have become an increasingly popular alternative.
- D) uphold the findings of a previous study about the effect of mind-body therapies on behavior.

2

Based on the passage, behaviors can influence physical health by

- A) impacting the body's immune response.
- B) reinforcing the body's reactions to physical stress.
- C) changing the body's recovery time during illness.
- D) increasing the body's reception to inflammation.

3

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

- A) lines 1-5 ("Over ... practices")
- B) lines 5-8 ("According ... months")
- C) lines 8-10 ("Currently ... priority")
- D) lines 14-17 ("In ... system")

4

The discussion of "multi-dimensional behavioral therapies" in paragraph 3 (lines 29-40) primarily serves to

- A) introduce the claim that integrating mental and physical exercise can have a strong impact on health.
- B) provide a specific example of how these kinds of therapy can influence a person's overall health better than any others.
- C) inform readers about the different kinds of therapies they can use to supplement their physical activity.
- D) defend the study's findings regarding the efficacy of mind-body therapies on bolstering the immune system.

5

In line 31, "confer" most nearly means

- A) bestow.
- B) negotiate.
- C) admit.
- D) allocate.

6

The author implies that the study of mind-body therapies is especially important because

- A) there has not previously been a comprehensive study on the connection between MBTs and the immune system.
- B) MBTs are a new and unexplored way of helping to regulate moods, behavior, and immune responses.
- C) MBTs are becoming an increasingly effective method when combined with regular overall exercise.
- D) new findings show that MBTs have a greater impact on overall health and can replace physical exercise.

7

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

- A) lines 41-46 ("To ... responses")
- B) lines 46-50 ("Indeed ... vaccinations")
- C) lines 50-54 ("Our ... approaches")
- D) lines 54-59 ("For ... infections")

8

In line 70, "potent" most nearly means

- A) influential.
- B) vigorous.
- C) useful.
- D) stiff.

# Science

9

How does the graph relate to the passage?

- A) It indicates that stress hormones are only loosely linked with physical exercise.
- B) It highlights findings that exercise has an impact on lowering stress in the body.
- C) It supports the claim that cortisol is closely linked in the body with free fatty acids.
- D) It emphasizes the disparity between pure physical exercise and mind-body therapies.

10

According to the graph, the largest decrease in cortisol occurs between

- A) 15-30 minutes of exercise.
- B) 45-60 minutes of exercise.
- C) 60-90 minutes of exercise.
- D) 90-120 minutes of exercise.

11

It can reasonably be inferred from the graph that

- A) while stress hormones rise sharply at the beginning of exercise, they drop below the initial value after 120 minutes.
- B) the benefits of prolonged exercise are minimal at best unless one exercises for longer than 180 minutes.
- C) both cortisol and free fatty acid levels largely remain the same if exercising for a duration shorter than 60 minutes.
- D) a sustained drop in cortisol is beneficial only when combined with a large increase in free fatty acid levels.

# Science

Adapted from "A Molecular Model of Blood Cell Renewal." © 2004 by the Public Library of Science.

A developing organism captured on time-lapse video is a wonder to behold. If you're watching a chick embryo, by day 3, you'll see millions of cells engaged in a frenzy of activity, as rapidly dividing cells migrate to new positions, acquire the characteristics of specialized cells, and craft well-defined tissues, organs, and limbs in just under two weeks. In addition to the cells destined for specialization is another important group, stem cells, whose progeny have two very different fates. They can either "self renew"—that is, make identical copies of themselves—or generate intermediate progenitor cells that give rise to mature, differentiated cells.

Both differentiation and self renewal are guided by an elaborately regulated genetic program, which transforms embryonic stem cells into the many different cell types that make up the body. Adult stem cells share the hallmark trait of self renewal, but are relatively rare: in bone marrow, the source of hematopoiesis, or blood [formation], only an estimated one in 10,000–15,000 cells is an adult hematopoietic stem cell (HSC).

Studies that have compared the gene expression profiles of different types of stem cells to identify genetic signatures of "stemness" have found only a limited number of signature genes. And the molecular mechanisms that regulate this so-called potency and the self renewal process have remained obscure. Now, focusing on HSCs, Margaret Goodell and colleagues have undertaken a systematic evaluation of HSC renewal. The study identifies molecular signatures associated with discrete stages of the HSC self renewal cycle and proposes a molecular model of the process.

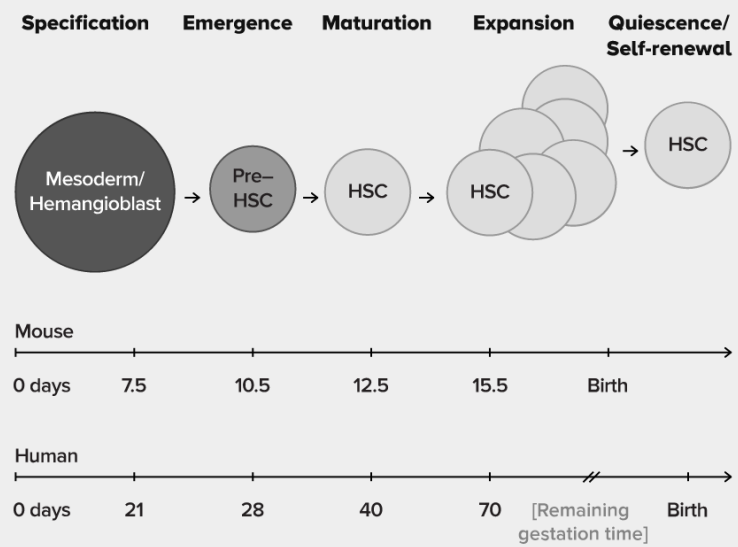
HSC renewal passes through three stages: quiescence, activation and proliferation, and a return to the dormant state. HSCs give rise to both red blood cells, which carry oxygen and carbon dioxide, and white blood cells, which fight infection. Once activated by a trigger, dormant HSCs engage a regulatory program that rapidly churns out billions of cells, then puts the brakes on cell division, prompting the return to a nondividing, quiescent state.

To understand the genetic programs underlying this process, Goodell and colleagues induced proliferation in HSCs (with the chemotherapeutic drug, 5-fluorouracil, or 5FU), then allowed the cells to return to quiescence, so they could characterize the changes in gene expression that occurred during each stage. They compared these time-specific patterns to the gene expression profiles of naturally proliferating fetal mouse HSCs (which undergo massive proliferation) and quiescent adult mouse HSCs (which hardly divide at all) to find genes associated with the two different states.

Genes were grouped into proliferating or quiescent groups based on when they were expressed after 5FU treatment, and these groupings were refined based on comparisons to previously published HSC gene expression data. Functional analysis of these genes found a bias toward genes involved in cell division processes in the proliferation stage and toward cell division inhibitors in the quiescent stage, supporting the logic of the groupings.

With these results, Goodell and colleagues constructed a model of the HSC self renewal cycle: quiescent HSCs maintain a "state of readiness," molecularly speaking, that allows a quick response to environmental triggers. A stressor (like the chemotherapy mentioned above) triggers a "prepare to proliferate" state—a kind of pregnant pause—and then the proliferation machinery kicks in, going through an early and late phase before quiescence returns. By shedding light on the molecular mechanisms of stem cell renewal, this study will aid efforts to develop stem-cell-based clinical therapies, which depend on replicating the HSC self renewal cycle to replenish diseased or damaged tissue, and will ultimately guide efforts to grow stem cell colonies outside the body, a long-standing goal that would have many clinical applications.

Phases of Hematopoietic Stem Cell Development in Mouse and Human Embryos, in Days



Adapted from Hanna Mikkola and Stuart Orkin, "The Journey of Developing Hematopoietic Stem Cells." ©2006 by The Company of Biologists Limited

# Science

1

The main purpose of the passage is to

- A) contradict a widely held belief about hematopoietic stem cells.
- B) discuss the social implications of human stem cell research.
- C) describe the results of a study concerning hematopoietic stem cells.
- D) explain the process by which human stem cells differentiate into specific tissues.

2

It can reasonably be inferred from the passage that, prior to Goodell's study, research concerning stem cells had

- A) resulted in a comprehensive list of those genes involved in stem cell renewal and differentiation.
- B) failed to identify any genes that were expressed exclusively in stem cells.
- C) elucidated a number of regulatory mechanisms underlying gene expression in stem cells.
- D) isolated a few genes that were expressed exclusively in stem cells but had not identified how they worked.

3

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

- A) lines 5-8 ("In addition ... fates")
- B) lines 8-10 ("They ... cells")
- C) lines 11-14 ("Both ... body")
- D) lines 19-24 ("Studies ... obscure")

4

As used in line 10, "mature" most nearly means

- A) developed.
- B) mellow.
- C) thorough.
- D) experienced.

5

Which choice best summarizes the results of Goodell's study concerning hematopoietic stem cell renewal?

- A) Hematopoietic stem cells can differentiate into either red blood cells or white blood cells.
- B) The process of stem cell renewal can be subdivided into the stages of quiescence, activation, and proliferation.
- C) Hematopoietic stem cells differentiate in a fashion similar to fetal mouse stem cells.
- D) Different sets of genes are expressed in hematopoietic stem cells based on the stage of stem cell renewal.

6

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

- A) lines 14-15 ("Adult ... rare")
- B) lines 31-33 ("HSCs ... infection")
- C) lines 42-47 ("They ... states")
- D) lines 52-55 ("Functional ... groupings")

7

In line 24, "obscure" most nearly means

- A) unclear.
- B) complicated.
- C) ambiguous.
- D) secluded.

8

Which choice best represents the author's perspective on stem cell research?

- A) Stem cell research has the potential to substantially improve scientists' ability to repair damaged tissues in the body.
- B) While stem cell research can improve our understanding of human development, it requires advanced training and education.
- C) It is worthwhile to pursue stem cell research using fetal mouse stem cells but not human stem cells.
- D) Stem cell research has the potential to substantially improve doctors' ability to diagnose and treat diseases.

# Science

9

The main purpose of the figure is to

- A) suggest that both human and mouse embryonic stem cells spend most of their time in the quiescent phase of stem cell renewal.
- B) show that the timelines of stem cell renewal in human and mouse embryonic stem cells are identical.
- C) illustrate the different timelines by which human and mouse embryonic stem cells renew and differentiate.
- D) highlight how mouse stem cells differentiate into various tissues of the body.

11

According to the figure, at 15.5 days of embryonic development a mouse's hematopoietic stem cells are in the

- A) specification phase.
- B) emergence phase.
- C) maturation phase.
- D) expansion phase.

10

How does the figure support the author's description of the stem cell renewal process in the final paragraph of the passage?

- A) It establishes that stem cells go through a short period of quiescence before returning to a prolonged state of proliferation.
- B) It indicates that the stem cell renewal process occurs rapidly before birth but then slows down considerably after birth.
- C) It shows how stem cells go through a phase of rapid proliferation before returning to a state of quiescence.
- D) It clarifies how stem cells could be used to help repair damaged tissues in various clinical situations.

# Science

This passage is excerpted from the Ecological Society of America, "Human Alteration of the Global Nitrogen Cycle: Causes and Consequences." © 1997 by the Ecological Society of America.

Nitrogen is an essential component of proteins, genetic material, chlorophyll, and other key organic molecules. All organisms require nitrogen in order to live. It ranks behind oxygen, carbon, and hydrogen as the most common chemical element in living tissues. Until human activities began to alter the natural cycle, however, nitrogen was only scantily available to much of the biological world. As a result, nitrogen served as one of the major limiting factors that controlled the dynamics, biodiversity, and functioning of many ecosystems.

The Earth's atmosphere is 78% nitrogen gas, but most plants and animals cannot use nitrogen gas directly from the air as they do carbon dioxide and oxygen. Instead, plants - and all organisms from the grazing animals to the predators to the decomposers that ultimately secure their nourishment from the organic materials synthesized by plants - must wait for nitrogen to be "fixed," that is, pulled from the air and bonded to hydrogen or oxygen to form inorganic compounds, mainly ammonium and nitrate, that they can use.

The amount of gaseous nitrogen being fixed at any given time by natural processes represents only a small addition to the pool of previously fixed nitrogen that cycles among the living and nonliving components of the Earth's ecosystems. Most of that nitrogen, too, is unavailable, locked up in soil organic matter - partially rotted plant and animal remains - that must be decomposed by soil microbes. These microbes release nitrogen as ammonium or nitrate, allowing it to be recycled through the food web. The two major natural sources of new nitrogen entering this cycle are nitrogen-fixing organisms and lightning.

Nitrogen-fixing organisms include a relatively small number of algae and bacteria. Many of them live free in the soil, but the most important ones are bacteria that form close symbiotic relationships with higher plants. Symbiotic nitrogen-fixing bacteria such as the Rhizobia, for instance, live and work in nodules on the roots of peas, beans, alfalfa, and other legumes. These bacteria manufacture an enzyme that enables them to convert gaseous nitrogen directly into plant usable forms.

Lightning may also indirectly transform atmospheric nitrogen into nitrates, which rain onto soil.

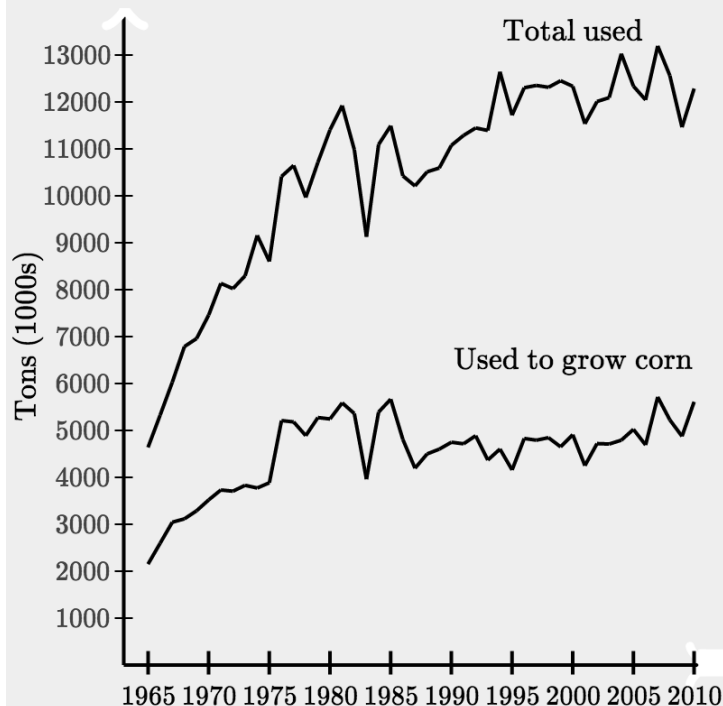
Quantifying the rate of natural nitrogen fixation prior to human alterations of the cycle is difficult but necessary for evaluating the impacts of human-driven changes to the global cycling of nitrogen. The standard unit of measurement for analyzing the global nitrogen cycle is the teragram (abbreviated Tg), which is equal to a million metric tons of nitrogen. Worldwide, lightning, for instance, fixes less than 10 Tg of nitrogen per year - maybe even less than 5 Tg. Microbes are the major natural suppliers of new biologically available nitrogen. Before the widespread planting of legume crops, terrestrial organisms probably fixed between 90 and 140 Tg of nitrogen per year. A reasonable upper bound for the rate of natural nitrogen fixation on land is thus about 140 Tg of nitrogen per year.

During the past century, human activities clearly have accelerated the rate of nitrogen fixation on land, effectively doubling the annual transfer of nitrogen from the vast but unavailable atmospheric pool to the biologically available forms. The major sources of this enhanced supply include industrial processes that produce nitrogen fertilizers, the combustion of fossil fuels, and the cultivation of soybeans, peas, and other crops that host symbiotic nitrogen-fixing bacteria. Furthermore, human activity is also speeding up the release of nitrogen from long-term storage in soils and organic matter.

Industrial fixation of nitrogen for use as fertilizer currently totals approximately 80 Tg per year and represents by far the largest human contribution of new nitrogen to the global cycle. That figure does not include manures and other organic nitrogen fertilizers, which represent a transfer of already-fixed nitrogen from one place to another rather than new fixation.

Until the late 1970s, most industrially produced fertilizer was applied in developed countries. Use in these regions has now stabilized while fertilizer applications in developing countries have risen more dramatically. The momentum of human population growth and increasing urbanization ensures that industrial fertilizer production will continue at high and likely accelerating rates for decades in order to meet the escalating demand for food.

Nitrogen fertilizer use (estimated) in the United States, 1964-2010



Tom Philpott, "A Brief History of Our Deadly Addiction to Nitrogen Fertilizer." ©2013 by Mother Jones Magazine.

# Science

1

The author's central claim in the passage is that

- A) human activities are hastening the rate at which nitrogen is fixed into biologically useful forms.
- B) nitrogen is a necessary symbiotic component to sustain life on earth and keep ecosystems in balance.
- C) industrial use of fertilizer has contributed to the rise of fixed nitrogen, outpacing the output of organic nitrogen.
- D) developing countries need to continue their use of fertilizer in order to meet rising agricultural demands.

2

In the passage, the author indicates that nitrogen

- A) is derived primarily from lightning and industrial fertilizer.
- B) is more essential than oxygen, carbon, and hydrogen.
- C) is mostly a minor factor in regulating ecosystems.
- D) is necessary to sustain biological life and ecosystems.

3

In line 15, "secure" most nearly means

- A) protect.
- B) defend.
- C) acquire.
- D) shelter.

4

According to paragraph 6, the main purpose of quantifying natural nitrogen fixation is to

- A) support claims about the consequence of human enterprise on nitrogen fixation rates.
- B) establish a unit of measurement to provide a baseline for fixed rates of nitrogen.
- C) provide examples of the impacts on nitrogen release from lightning and microbes.
- D) caution readers about the environmental effects of nitrogen release on the ecosystem.

5

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

- A) lines 43-46 ("Quantifying ... nitrogen")
- B) lines 46-49 ("The ... nitrogen")
- C) lines 49-52 ("Worldwide ... nitrogen")
- D) lines 52-54 ("Before ... year")

6

In lines 65, "symbiotic" most nearly means

- A) harmonious.
- B) interdependent.
- C) concerted.
- D) collegial.

7

The author implies that humans are altering the natural cycle of nitrogen by

- A) stabilizing the food web chain of events.
- B) using industrial fertilizer and fossil fuels.
- C) expanding biodiversity and agriculture.
- D) decreasing the release of fixed elements.

8

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

- A) lines 57-61 ("During ... forms")
- B) lines 61-65 ("The ... bacteria")
- C) lines 66-68 ("Furthermore ... matter")
- D) lines 69-72 ("Industrial ... cycle")

# Science

9

How does the data in the graph support the author's point in the last paragraph?

- A) The graph indicates that the use of fertilizer on corn in developed countries is rising faster than the overall use of fertilizer.
- B) The graph strengthens the argument that fertilizer production must be halted in order to reduce nitrogen rates.
- C) The graph suggests that urbanization will lead to a rapid acceleration of nitrogen fertilizer production in the United States.
- D) The graph supports the claim that fertilizer production in developed countries has largely stabilized.

11

The graph indicates that, between 1960 and 2010, the United States' nitrogen fertilizer use has

- A) remained stable.
- B) fallen off, then increased again.
- C) tripled in volume.
- D) decreased significantly.

10

The main purpose of the information in the graph is to

- A) show the relationship over time between overall fertilizer use in the United States and the amount used to grow corn.
- B) illustrate the effect of overall nitrogen fertilizer use on the environment in the United States.
- C) forecast the production of nitrogen fertilizer use in the United States over the coming century.
- D) indicate the inherent risk in increasing production of nitrogen fertilizer use and its impact on the corn industry.

# Social science

This passage is adapted from Jan Delhey and Christian Kroll, "A 'Happiness Test' for the New Measures of National Well-Being: How Much Better than GDP Are They?" ©2012 by WZB Berlin Social Science Center.

Line There is currently a broad global movement away from  
considerations of mere economic success towards a new  
public policy goal involving a broader notion of quality of  
life. This movement has also spurred a rethinking of which  
5 statistics inform us best about a country's situation and how  
its citizens are faring. For decades, the gold standard was a  
macroeconomic indicator: the GDP - gross domestic product,  
calculated per capita. This is the most prominent yardstick  
that the media, politicians and the public consider when they  
10 try to assess how a country is performing. However, this  
measure was never meant to be a measure of the welfare of  
nations (as its creator Simon Kuznets warned in the 1930s)  
and so there is growing skepticism about the GDP's  
usefulness as a measure of national well-being. Slogans such  
15 as "beyond GDP" or "redefining progress" challenge the  
preoccupation with the GDP.

Three key strategies have been employed to develop a  
better measure of well-being: healing the GDP,  
complementing the GDP, and replacing the GDP . . .

20 The first group of initiatives tries to deal with the  
downsides of the GDP by attempting to fix the indicator  
itself. . . .

One key aim of this group of measures is to account for  
sustainability and the environmental damage associated with  
25 GDP growth. For example, the Index of Sustainable  
Economic Welfare and the Genuine Progress Indicator are  
both based on the consumption of private households.  
However, they also reflect additional social factors such as  
household labor and education with a rising value, while air  
30 pollution and environmental damage lower the score. As a  
consequence, the downsides of economic growth and  
modernization ought to be accounted for whilst retaining the  
benefits of the GDP, namely a single figure that captures  
different entities and is comparable across nations. . . .

35 The second group of measures moves further away from  
the GDP as a yardstick than the previous approaches but does  
not abandon the sum of goods and services altogether.  
Instead, this group of measures seeks to assess national well-  
being by complementing the GDP with a number of key  
40 social indicators. . . .

For example, the Human Development Index comprises  
the three dimensions health, education, and material living  
conditions, which are measured by life expectancy, years of  
schooling, and GNI [gross national income], respectively. . . .  
45 While the method of complementing the GDP with further  
indicators is able to overcome the controversial monetization  
from which the measures that try to "heal GDP" suffer, the  
standardization of different units is also controversial. In  
particular, merging different units into a single standardized  
50 index is methodologically challenging and again requires  
value judgements by the researcher. . . .

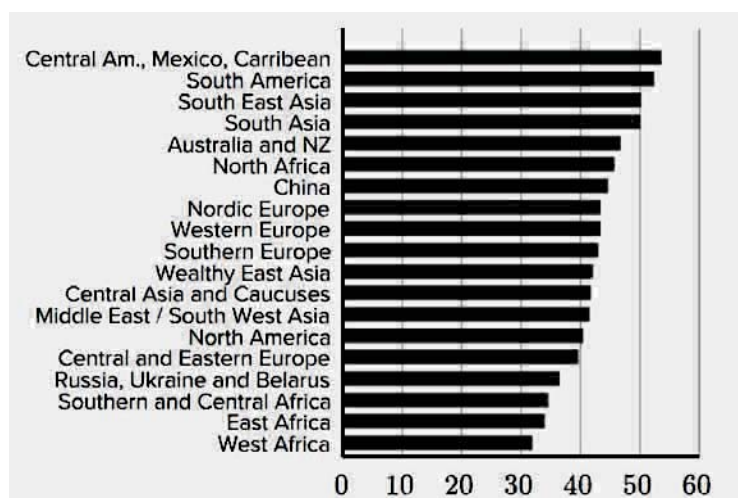
The most radical departure from the GDP is embodied by  
the third group of measures, which seeks alternative  
indicators of well-being without accounting for the sum of  
55 goods and services produced in an economy. The logic  
behind this approach is that the GDP has always been and  
remains a means to an end rather than the end itself. . . .

Famous examples include the Happy Planet Index  
calculated by the New Economics Foundation. The index

60 comprises life expectancy, life satisfaction, and the  
ecological footprint and is therefore able to demonstrate how  
many resources countries need in order to produce a certain  
level of health and subjective well-being. . . .

Replacing the GDP altogether is quite a drastic strategy  
65 for assessing national well-being, as not only is economic  
growth a prerequisite for many of the social goods that make  
life enjoyable but the metric of GDP is also highly correlated  
with such other factors. Thus, by arguing that the GDP is  
only a means to an end, these measures are in danger of  
70 making a conceptual assumption that is notable in theory but  
can be challenged in practice on the basis of actual causal  
mechanisms and empirical data.

Happy Planet Index (HPI) by Geographic Subregion



Adapted from "The Unhappy Planet Index 2.0," ©2009 by  
nef (the new economics foundation)

1

The authors' central claim in the passage is that

- A) replacing the GDP outright may seem appealing, but its alternatives would be difficult and dangerous to implement.
- B) well-being and economics have not been shown to correlate to any significant degree.
- C) the GDP can only measure economics, while happiness must be considered primarily in terms of other factors.
- D) there is a growing movement to improve the way in which a country's well-being is measured.

2

In the first paragraph, the reference to Simon Kuznets mainly serves to

- A) emphasize that the GDP is a respected and valid tool.
- B) underscore a common concern about the GDP by citing a critic.
- C) clarify an abstract point about the development of the GDP by mentioning its creator.
- D) strengthen the argument that the GDP does not adequately measure well-being.

3

As used in line 8, “prominent” most nearly means

- A) pronounced.
- B) remarkable.
- C) recognized.
- D) projecting.

4

The authors imply that the “first group of initiatives” would primarily

- A) change the measurement approach to encompass only social factors.
- B) take both positive and negative factors into account universally.
- C) show the positive effects of modernization in its new measurements.
- D) shift the measurement of GDP so that it is calculated per capita.

5

As used in line 33, “figure” most nearly means

- A) symbol.
- B) number.
- C) level.
- D) structure.

6

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

- A) lines 17–19 (“Three . . . the GDP”)
- B) lines 20–22 (“The first . . . itself”)
- C) lines 25–27 (“For example . . . households”)
- D) lines 30–34 (“As a consequence . . . nations”)

7

It can be inferred that the alternative approach to measuring happiness that is most different from the current approach is based on the belief that

- A) GDP is a helpful measurement of how economics contribute to welfare in different countries
- B) the sum of goods and services produced by a country is not a necessary factor in determining a country’s well-being.
- C) material living conditions and life expectancy have no effect on individual happiness.
- D) economic prosperity is a good predictor of life expectancy and is particularly useful for comparing life expectancies around the world.

8

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

- A) lines 52–55 (“The most . . . economy”)
- B) lines 55–57 (“The logic . . . itself”)
- C) lines 58–59 (“Famous . . . Foundation”)
- D) lines 59–63 (“The index . . . well-being”)

9

According to the graph, the region with the fourth-lowest HPI score is

- A) Russia, Ukraine, and Belarus.
- B) Central and Eastern Europe.
- C) South Asia.
- D) North America.

10

Based on the passage, which of the following is most likely to contribute to South America's HPI ranking?

- A) A somewhat high duration of education
- B) A moderately low gross national income
- C) A fairly low production of services
- D) A relatively high life expectancy

11

The greatest number of geographic regions have an HPI score in which range?

- A) 20-30
- B) 30-40
- C) 40-50
- D) 50-60

Adapted from Terry F. Pettijohn II, Kimberly E. LaPiene, Terry F. Pettijohn, and Amanda L. Horting, "Relationships between Facebook Intensity, Friendship Contingent Self-Esteem, and Personality in U.S. College Students." (C) 2012 by Terry F. Pettijohn II et al.

Online social networking sites, such as Facebook, Google +, and Bebo, have grown in popularity in recent years and they provide an exciting new area of study in the field of psychology. Facebook provides individuals with easy access to view personal information about their friends, coworkers, and even complete strangers. Facebook has over 500 million active users and every month over 700 billion minutes are spent on Facebook. Among U.S. college students, 96% have a Facebook account. Given the popularity of online social networking sites, Facebook in particular, the current study was designed to investigate the relationship between Facebook use, the importance of quality of friendships to self-esteem, and personality in college students.

Social relationships are considered by many to be the most important component of human life. With the expansion of the Internet and social networking sites, more people are using technology to communicate with their friends and family online and maintain these interpersonal connections in novel ways that were not available in previous generations. Some researchers initially believed online activities negatively impacted relationships and feared that virtual communication would replace face-to-face interactions and deteriorate social bonds. Others, however, have found support for the idea that social networking sites and the Internet have expanded methods of staying socially connected with others and increased relationship closeness and connectedness. Social networking sites, such as Facebook, allow users to add "friends" and keep track of their status, interests, photos, "likes," and updates of others' personal information in cyberspace.

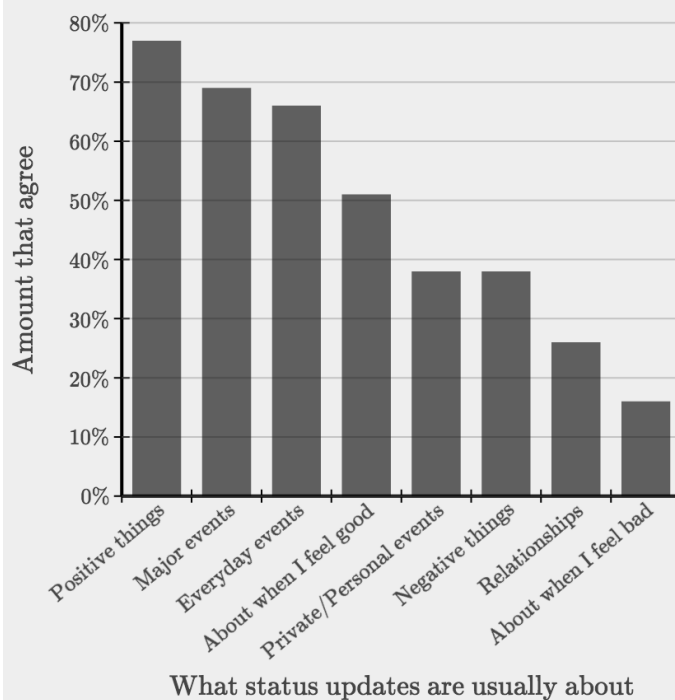
Internet use is related to both positive and negative psychological and social factors, but the key to understanding these outcomes is through examining specific types of Internet use instead of simply the amount of time spent online. While using social media can have positive benefits associated with community engagement, education, social connectedness, and identity development, it can also lead to risks linked to social rejection, cyberbullying, depression, exposure to inappropriate content, and other negative consequences related to general well-being. For example, a negative relationship has been found between time spent using electronic media, including social networking sites, and college grades. In college, upper-class students with more Facebook friends reported high levels of social adjustment and stronger attachment to the college than students with less Facebook friends, although freshmen did not benefit from having more Facebook friends and actually reported decreased social and emotional adjustment.

With respect to self-esteem, the research is also mixed, especially considering the different types of self-esteem. In certain cases, excessive Facebook use may be related to lower general self-esteem. For example, Mehdizadeh (2010) found a significant negative correlation between self-esteem and the number of times students checked Facebook per day and between self-esteem and the time spent on Facebook per session. Those with lower self-esteem also presented less self-promoting content on Facebook pages. However, Facebook

can enhance self-esteem specifically related to the social functions of the self (social self-esteem) when individuals receive positive comments and feedback from their friends online. In addition, researchers have found that introverted individuals and individuals with low self-esteem may benefit from the social opportunities provided by the Facebook interface, without the anxiety of interacting face-to-face. Facebook provides an opportunity for individuals who value their friendships to stay informed about social events and this technology may be particularly important and highly utilized by individuals whose value of themselves is contingent on how well their relationships with friends are succeeding... Related to the current investigation, the quality of friendships and how this quality affects self-esteem may be correlated with the frequency and intensity in which individuals engage in social networking. Individuals who value their friendships and see these friendships as important dimensions of themselves may engage in increased social networking behaviors to provide additional means for keeping connected with friends and sharing personal activities.

\* Changed for cultural accuracy.

Percentage of users who answered that they write about the given topic to a high degree



What status updates are usually about

Source: Adapted from Tuncay Dilci, et al. "The Views of Primary School Students on Use of Riddles in the Process of Education and Training," Middle-East Journal of Scientific Research, 12(1): 23-20, 2012.

1

The primary purpose of the passage is to

- A) discuss the benefits and drawbacks of using social media to maintain relationships.
- B) debate the merits of using social media as a primary form of interpersonal communication.
- C) emphasize the positive aspects behind the use of social media to cultivate relationships.
- D) raise questions about research findings regarding the negative impact of online activities on relationships.

2

The author implies that studying online social networks is important to the field of psychology because

- A) online social networks can reveal new connections between social media use and self-regard.
- B) online social networks are becoming increasingly relevant modes of communication.
- C) online social networks are used by a large percentage of college students to maintain friendships.
- D) online social networks shed light on how college students create and preserve relationships online.

3

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

- A) lines 1–4 (“Online . . . psychology”)
- B) lines 4–6 (“Facebook . . . strangers”)
- C) lines 6–9 (“Facebook . . . account”)
- D) lines 9–13 (“Given . . . students”)

4

In line 10 “quality” most nearly means

- A) condition.
- B) affirmation.
- C) individuality.
- D) endowment.

5

The sentence “Some researchers initially believed online activities negatively impacted relationships” in lines 20–21 primarily serves to

- A) introduce a conflicting argument to the study’s main findings.
- B) provide support for the claim that most online social interactions lead to bullying.
- C) offer evidence that early studies of social media use are outdated.
- D) warn readers about the dangers of using social media as a form of communication.

6

Based on the passage, the connection between social media use and self-esteem is

- A) complicated due to the many variables that must be accounted for.
- B) strongly linked because social media can reveal self-perception.
- C) inconsistent although multiple studies suggest there is a correlation.
- D) contradictory because not enough research has been undertaken.

7

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

- A) lines 49–52 (“With ... self-esteem”)
- B) lines 52–56 (“For ... session”)
- C) lines 57–61 (“However ... online”)
- D) lines 61–64 (“In ... face-to-face”)

8

In line 66, “value” most nearly means

- A) commend.
- B) appreciate.
- C) glorify.
- D) honor.

9

How does the graph relate to the passage?

- A) It illustrates the point that self-esteem is correlated with how often users engage with social media.
- B) It provides context for the claim that excessive Facebook use leads to lower self-esteem.
- C) It supports the study's findings that content updates cover a range of topics and emotions.
- D) It demonstrates the disparity between different categories of social media updates and their content.

11

According to the graph, which two kinds of status updates are written with equal frequency?

- A) Positive things and major events
- B) Private/personal events and negative things
- C) Major events and everyday events
- D) Negative things and relationships

10

The passage and the graph agree that

- A) people post about negative things fairly infrequently.
- B) people post about personal events more than half the time.
- C) people post about everyday events rarely.
- D) people post about relationships most often. -

This passage is excerpted from Kasley Killam, "A Hug A Day Keeps the Doctor Away," © Scientific American 2015.

During my final semester of undergrad, I made two signs that read, "Feeling stressed about exams? Have a free hug!" Then I recruited a friend and we stood in the entrance of the campus library, held up the signs, and waited. [Passersby] had one of two reactions: Either they quickly looked down at their phones and awkwardly shuffled by, or their faces lit up as they embraced us. Most people were enthusiastic. Some exclaimed, "You made my day!" or "Thank you. I needed this." One leapt into my arms, nearly toppling me over. After two hours of warm interactions, my friend and I couldn't believe how energized and happy we felt.

A study published earlier this month suggests that, in addition to making us feel connected with others, all those hugs may have prevented us from getting sick. At first, this finding probably seems counterintuitive (not to mention bizarre). You might think, like I did, that hugging hundreds of strangers would increase your exposure to germs and therefore the likelihood of falling ill. But the new research out of Carnegie Mellon indicates that feeling connected to others, especially through physical touch, protects us from stress-induced sickness. This research adds to a large amount of evidence for the positive influence of social support on health.

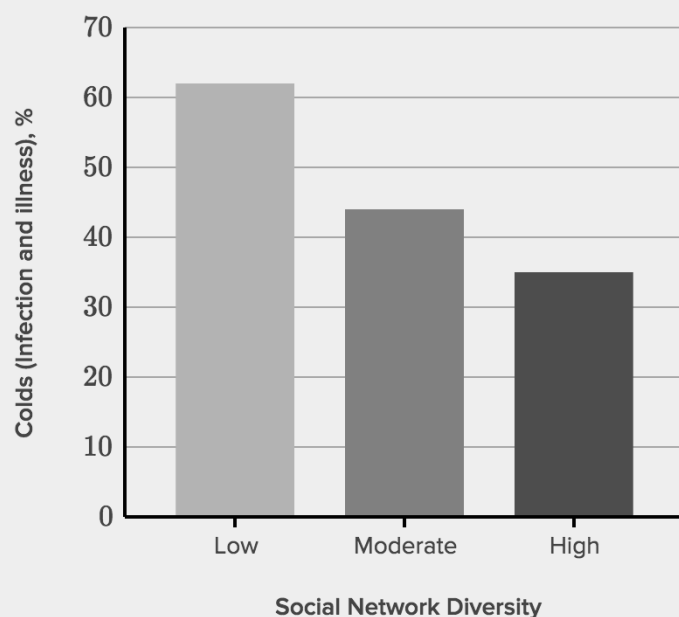
Social support can broadly be defined as the perception of meaningful relationships that serve as a psychological resource during tough times. More specifically, this means emotional support, such as expressions of compassion, and may include access to information or other assistance. The researchers measured social support by giving out a questionnaire in which participants rated different statements (e.g. "I feel that there is no one I can share my most private worries and fears with."). Then, they conducted interviews every night for two weeks to find out how often participants experienced conflict with others and how often they received hugs. Finally, the researchers infected participants with a common cold virus and observed what happened.

Several interesting results emerged. Encouragingly, people overall had a strong sense of social support, as shown by a high median score on the questionnaire. Similarly, they were more likely to be hugged (which happened on an average of 68% of days during the two-week interview period) than to experience conflict (7% of days).

The most important results, however, were what the researchers deemed a "stress-buffering effect." Keep in mind that interpersonal conflict can cause people a lot of stress and thereby weaken their immune systems. Yet regardless of how much conflict they endured, participants with a strong sense of social support developed less severe cold symptoms than those who felt socially deprived. Likewise, the more often people hugged, the less likely they were to get sick, even among individuals who frequently had tense interactions. In other words, both social support and hugging prevented against illness. The same lead researcher has previously shown that the more diverse types of social ties a person has, such as with friends, family, coworkers, and community, the less susceptible to colds they are.

Evidently, just as we prioritize exercise and nutrition, we ought to prioritize quality time with loved ones; just as we avoid unhealthy habits like smoking, we should make effort to avoid isolation and to counter social exclusion. And even if you don't want to hug hundreds of strangers (although I recommend trying it), don't underestimate the healing power of touch.

The effect of social network diversity on observed colds as verified through objective criteria.



Source: Adapted from Cohen S, Doyle WJ, Skoner DP, Rabin BS, Gwaltney JM, Jr. "Social Ties and Susceptibility to the Common Cold." JAMA. 1997;277(24):1940-1944.

1

The first paragraph serves mainly to

- A) provide background information necessary to understand the scientific study.
- B) introduce the scientific study through a personal anecdote.
- C) show that not all scientific experiments need to be conducted in a laboratory.
- D) describe the author's experience as a subject of the scientific study.

2

In the second paragraph, the author implies that the study shows hugs to be

- A) the only proven method of preventing sickness.
- B) less successful than social support in protecting people from colds and other illnesses.
- C) not conclusively effective at helping people maintain good health.
- D) one of several ways to guard against some illnesses.

3

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

- A) lines 12–14 ("A study . . . sick")
- B) lines 16–18 ("You . . . ill")
- C) lines 18–21 ("But . . . sickness")
- D) lines 21–22 ("This . . . health")

4

As used in line 26, "expressions" most nearly means

- A) demonstrations.
- B) declarations.
- C) revelations.
- D) looks

5

As used in line 28, "giving out" most nearly means

- A) distributing.
- B) donating.
- C) conferring.
- D) sacrificing.

6

Which of the following can be inferred about the "stress-buffering effect" of social support?

- A) People who experience a lot of conflict are more likely than other people to develop severe cold symptoms, regardless of their level of social support.
- B) People who experience a lot of conflict but have a lot of social support are less likely to develop severe cold symptoms than people who experience little conflict but have little social support.
- C) People who experience little conflict but still feel stressed about it are more likely than other people to develop moderate to severe cold symptoms.
- D) People who experience little conflict but do not feel stressed about it always have significantly higher levels of social support than those who feel stressed.

7

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

- A) lines 42–43 ("The most ... effect")
- B) lines 45–48 ("Yet ... deprived")
- C) lines 48–50 ("Likewise ... interactions")
- D) lines 52–55 ("The same ... are")

8

The phrase "friends, family, coworkers, and community" (line 54) primarily serves to

- A) clarify that only some social connections are beneficial to health.
- B) illustrate the kinds of social ties to which the author is referring.
- C) describe the groups of participants in the researcher's previous study.
- D) provide examples of people from whom readers might be exposed to illness.

9

According to the graph, the average incidence of colds for participants who had low-diversity social groups was closest to

- A) 30%
- B) 40%
- C) 60%
- D) 70%

11

According to the graph, the average incidence of colds for participants who reported 5 types of social relationships was closest to

- A) 30%
- B) 40%
- C) 50%
- D) 60%

10

According to the passage, the link shown in the graph between high social diversity and a strong immune system

- A) illustrates the “stress-buffering effect” of social support.
- B) proves the value of frequent hugs.
- C) shows that people with many social ties have less conflict in their lives than other people do.
- D) cannot be explained by science.

This passage is adapted from David Z. Hambrick, "Winning SCRABBLE and the Nature of Expertise," (c)2015 Scientific American.

SCRABBLE has been one of the most popular board games in the world for decades. And, now, as an increasingly popular domain for scientific research on expertise, it is giving psychologists a better understanding of the underpinnings of complex skill and a clearer picture of the origins of greatness. The overarching goal of this research is to better understand the interplay between "software" and "hardware" aspects of the cognitive system. Software factors include knowledge and skills that are acquired through experience, whereas hardware factors include genetically-influenced abilities and capacities. SCRABBLE is ideal for research on how these factors interact not only because it is relatively easy to find research participants from a wide range of skill, but because it can be imported into the lab.

The basic goal of SCRABBLE is to create intersecting words by placing lettered tiles on a board containing a 15 x 15 grid. Knowledge is, of course, critical for success in this task. If you want to become a great SCRABBLE player, first and foremost, you have to know a lot of words. You also need to be adept at identifying potential plays. Finally, you have to know SCRABBLE strategy—or what aficionados call "rack management"—such as how to keep a good mix of consonants and vowels.

People aren't born with this type of specialized knowledge. Research indicates that we may come into the world equipped with the building blocks for complex skills such as math, but certainly nothing as specific as knowledge of words in a particular language. Thus, experience is necessary to become an expert in SCRABBLE. And, in fact, SCRABBLE skill has been found to correlate positively with the amount of time people spend engaging in SCRABBLE-related activities. In one study, using official SCRABBLE rating as an objective measure of skill, researchers found that groups of "elite" and "average" SCRABBLE players differed in the amount of time they had devoted to things like studying word lists, analyzing previous SCRABBLE games, and anagramming—and not by a little. Overall, the elite group had spent an average of over 5,000 hours on SCRABBLE study, compared to only about 1,300 hours for the average group.

Clearly, expert SCRABBLE players are to some degree "made." But there is evidence that basic cognitive abilities play a role, too. In a study recently published in *Applied Cognitive Psychology*, Michael Toma and his colleagues found that elite SCRABBLE players outperformed college students from a highly selective university on tests of two cognitive abilities: working memory and visuospatial reasoning. Working memory is the ability to hold in mind information while using it to solve a problem, as when iterating through possible moves in a SCRABBLE game. Visuospatial reasoning is the ability to visualize things and to detect patterns, as when imagining how tiles on a SCRABBLE board would intersect after a certain play. Both abilities are influenced by genetic factors.

Further evidence pointing to a role of these abilities in SCRABBLE expertise comes from a recent brain imaging study by Andrea Protzner and her colleagues at the University of Calgary. Using functional magnetic resonance imaging (fMRI), these researchers recorded the brain activity of SCRABBLE players and control subjects as they performed

a task in which they were shown groups of letters and judged whether they formed words. (fMRI measures brain activity by detecting changes in blood flow within different regions of the brain.) The major finding of this study was that competitive SCRABBLE players recruited brain regions associated with working memory and visual perception to perform this task to a greater degree than the control subjects did.

What might explain SCRABBLE experts' superiority in working memory and visuospatial reasoning? For the same basic reason that basketball players tend to be tall, a likely explanation is that people high in working memory and visuospatial reasoning abilities are people who tend to get into, and persist at, playing SCRABBLE: because it gives them an advantage in the game. This explanation fits with what behavioral geneticists call gene-environment correlation, which is the idea that our genetic makeup influences our experiences.

These findings add to an emerging understanding of complex skill that may ultimately bring expertise within reach of a larger number of people than is currently the case. Beginning of reading passage footnotes.

\* Changed for cultural accuracy.

Survey results of members with National Scrabble Association Ratings versus college students at a liberal arts college who have played Scrabble at some point but have never competed.

Variables	Scrabble experts	College students
Number of people	114	147
Ave. days per year spent playing scrabble	221.37	8.1
Questions	Scrabble experts answering yes	College students answering yes
Have you ever studied words from the <i>Official Scrabble Player's Dictionary</i> or a similar source?	99%	5%
Are there words that you know are legal in Scrabble, but you do not know what the word means?	89%	26%
When you play Scrabble do you <b>always</b> keep track of the letters that have been played, so you know if you are likely to get a rare letter that you might need?	80%	4.8%
When your opponent has the Scrabble board facing him or her, do you sometimes mentally rotate the board to imagine what it would look like if it were facing you?	17%	38%
When you think about the layout of Scrabble boards, do you know the point value for every square on the board (e.g. double or triple word/letter score tiles)?	70%	3%

1

The passage makes the most extensive use of which kind of evidence?

- A) expert testimony.
- B) scientific studies.
- C) secondary sources.
- D) statistical analysis.

2

The main effect of the term “hardware” line 8 is to suggest that the human brain.

- A) is more like a computer than people realize.
- B) has particular characteristics that cannot be changed.
- C) can be essentially reprogrammed through people’s actions.
- D) can be improved through the use of computers.

3

Evidence from the passage suggests that elite SCRABBLE players would be most likely to outperform non-elite SCRABBLE players in which of the following?

- A) Gaining admission to a selective university.
- B) Playing a board game like chess.
- C) Solving a mathematical equation.
- D) Learning a foreign language.

4

Which choice provides the best evidence for the claim that two people performing the same activity may be using different areas of the brain?

- A) lines 17-19 (“Knowledge ... words”)
- B) lines 31-37 (“In one ... little”)
- C) lines 61-63 (“fMRI ... brain”)
- D) lines 63-67 (“The major ... did”)

5

The author implies that people who experience great success in a given activity are often born with

- A) advantages uniquely suited to that activity.
- B) a drive to succeed in any activity.
- C) parents who value success in that activity.
- D) a desire to participate in many activities.

6

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

- A) lines 28-31 (“Thus ... activities”)
- B) lines 37-39 (“Overall ... group”)
- C) lines 50-52 (“Visuospatial ... play”)
- D) lines 69-74 (“For ... game”)

7

As used in line 32, “objective” most nearly means

- A) perceptible.
- B) sensory.
- C) intentional.
- D) unbiased.

8

The main purpose of paragraph 3 is to

- A) trace the non-cognitive factors associated with SCRABBLE expertise.
- B) show that average SCRABBLE players lack the genetic advantages of elite players.
- C) examine the value of childhood training in predicting SCRABBLE success.
- D) demonstrate that hard work is all it takes to become an elite SCRABBLE player.

9

According to the chart, the question to which the smallest percentage of college students answered “yes” mainly tested the students’

- A) vocabulary knowledge.
- B) critical thinking.
- C) working memory.
- D) visuospatial reasoning.

11

According to the chart, elite SCRABBLE players are most likely to do which of the following?

- A) Study the definitions of words.
- B) Keep track of letters played.
- C) Memorize point values.
- D) Memorize words.

10

Based on the passage and the chart, college students playing SCRABBLE are more likely than elite players to

- A) make an effort to visualize the board from a different perspective, because they are less able to rely on visuospatial reasoning.
- B) have difficulty remembering which letters have been played, because they use their working memory less.
- C) forget to study, because they are less invested in winning any particular game.
- D) spend time learning words, because they have less inherent talent than elite players.

This passage is excerpted from Stephen J. Lycett, "Dynamics of Cultural Transmission in Native Americans of the High Great Plains," ©2014 by Stephen J. Lycett.

As case studies go, understanding the distribution of cultural elements in Native American communities during the historical period of the Great Plains would seem a most challenging one. Famously, there is a mixture of powerful internal and external factors, creating -- for a relatively brief period in time -- a seemingly distinctive set of shared elements from a linguistically diverse set of peoples. This is known across the world as the "Great Plains culture." [In our study], quantitative analyses show how different processes operated on two sets of cultural traits among nine High Plains groups. Moccasin decorations exhibit a pattern consistent with geographically-mediated between-group interaction. However, group variations in the religious ceremony of the Sun Dance also reveal evidence of purifying cultural selection associated with historical biases, dividing down ancient linguistic lines. The latter shows that while the conglomeration of "Plains culture" may have been a product of merging new ideas with old, combined with cultural interchange between groups, the details of what was accepted, rejected or elaborated in each case reflected pre-existing ideological biases. Although culture may sometimes be a "melting pot," the analyses show that even in highly fluid situations, cultural mosaics may be indirectly shaped by historical factors that are not always obvious. . . .

"Culture" is the conglomeration of information, knowledge, ideas, and beliefs, shared by communities and transmitted by social interaction. This shared property characterizes all human societies. Communities that came to occupy the High Great Plains during the 19th century exemplify the manner in which humans can take existing ideas, elaborate them, combine them with new ones, pass them successfully between groups and create novel, distinct patterns, visible over temporal and spatial scales. Attempting to examine the role of specific factors in creating cultural patterning under such historically-contingent, transient, and dynamic conditions, however, presents a challenge.

Here, analyses have shown the presence of distinct processes operating and ultimately influencing the representation of cultural traits in different tribes. Patterns of similarity and difference in moccasin designs among different tribes show a statistically significant relationship with the model of geographic relationships between tribes. No statistical effect of language affiliation on the distribution of moccasin decorations was detected. This indicates that the representation of moccasin decoration types among groups is, in this case, most strongly determined by whether or not that trait is present in another, geographically proximate, tribe. In other words, selection biases have not disrupted the distribution of these decorations to the extent that they deviate significantly from a pattern predictable on the basis of the geographic relationships between tribes alone. These results would seem to reaffirm the role of intergroup relations in creating a pattern of shared cultural similarity over the region during the 19th century, which many have previously discussed.

Behavioral variation between tribes in terms of their practice of the religious ceremony of the Sun Dance also indicated a statistical relationship with geography, again

reiterating the role of inter-tribe transmission in creating the phenomenon historically labeled as the "Great Plains culture." However, patterns of inter-tribe variation in Sun Dance elements also exhibited a statistically significant relationship with linguistic affinities between different tribes. Ordinarily, this pattern might simply be attributed to the fact that tribes with more mutually comprehensible languages were able to more effectively transmit the behavioral variants among themselves. Here, however, language patterns were found not to correlate with geographic patterns and, moreover, the statistical relationship between Sun Dance patterning and linguistic affiliation was found to still hold even when geography was controlled for. The relationship between Sun Dance variations and language patterns is, therefore, in this instance puzzling.

The Similarity of Sun Dances Among Four Great Plains Tribes

	Arapho	Assiniboiné	Gros Ventre	Blackfoot
Arapho	100%	30%	50%	41%
Assiniboiné	30%	100%	32%	32%
Gros Ventre	51%	32%	100%	48%
Blackfoot	41%	32%	48%	100%

The table demonstrates the degree of similarity (with a maximum similarity of 100% when a group is compared to itself) between any given pairing among the four tribes.

1

The author makes the most extensive use of which kind of evidence?

- A) Personal recollections.
- B) Statistics.
- C) Quantitative analysis.
- D) Expert testimony.

2

As used in line 12, “mediated” most nearly means

- A) resolved.
- B) influenced.
- C) intervened.
- D) reconciled

3

The word “mosaic” (line 23) primarily serves to

- A) provide an image to contrast with a commonly-used metaphor.
- B) creatively illustrate the ways in which Great Plains tribes have shared a common culture.
- C) characterize the artistic traditions shared by Great Plains tribes.
- D) sarcastically comment on the Great Plains tribes’ history of conflict.

4

The main purpose of the author’s discussion of cultural patterning in paragraph two is to

- A) refute the findings of another study.
- B) contest an accepted theory.
- C) set forth the challenges of the study.
- D) present a controversial claim.

5

What does the author imply about similarities in moccasin design among Great Plains tribes in the 19th century?

- A) The moccasin designs are as similar as the tribes’ Sun Dances.
- B) Similar languages played a small but vital role in determining the similarity of the tribes’ moccasin designs.
- C) The similarities in moccasin design can be explained in the context of the tribes’ relative geographies.
- D) The Great Plains tribes did not have common cultural elements until after the 19th century.

6

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

- A) lines 4–7 (“Famously . . . peoples”)
- B) lines 39–42 (“Patterns . . . tribes”)
- C) lines 43–44 (“No . . . detected”)
- D) lines 61–63 (“However . . . tribes”)

7

It can be reasonably inferred that the relationships among the Sun Dances of the Great Plains tribes is puzzling because

- A) it would be logical for language and geography to correlate, but they do not.
- B) the tribes with similar moccasin designs should have similar Sun Dances, but they do not.
- C) language patterns do not normally have such a strong influence on cultural developments.
- D) geography is the only logical explanation for such strong cultural similarities.

8

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

- A) lines 13–16 (“However . . . lines”)
- B) lines 48–51 (“In other . . . alone”)
- C) lines 56–61 (“Behavioral . . . culture”)
- D) lines 67–71 (“Here . . . for”)

9

According to the table, which two tribes have the most similar Sun Dances, discounting each tribe's comparison to itself?

- A) The Gros Ventre and Arapho tribes.
- B) The Blackfoot and Gros Ventre tribes.
- C) The Arapho and Blackfoot tribes.
- D) The Assiniboine and Gros Ventre tribes.

11

The difference between the tribes with the greatest level of similarity and the tribes with the least level of similarity, as depicted in the chart, is approximately

- A) 30%.
- B) 20%.
- C) 40%.
- D) 50%.

10

According to the passage, the similarities between the tribes' Sun Dances as shown in the chart can be best attributed to

- A) the close geographical locations that the tribes shared.
- B) similarities in the languages from which their present-day languages derived.
- C) patterns of similarity in design preferences among different tribes.
- D) selection biases that different tribes have exhibited.

# Social science

This passage is excerpted from Yupei Zhao, "New Media and Democracy: Three Competing Visions from Cyber-Optimism and Cyber-Pessimism." ©2014 by Yupei Zhao.

Political communication scholars are keenly concerned with the extent to which new media is affecting politics... Accordingly, the following sections present the respective positions of cyber-optimists and cyber-pessimists in relation to three key areas of the debate: how new media enable minor parties to have a greater [or lesser] presence; how new media could make it possible to strengthen citizens' attempts in political participation; how citizens are using (micro) blogs to participate in political communication.

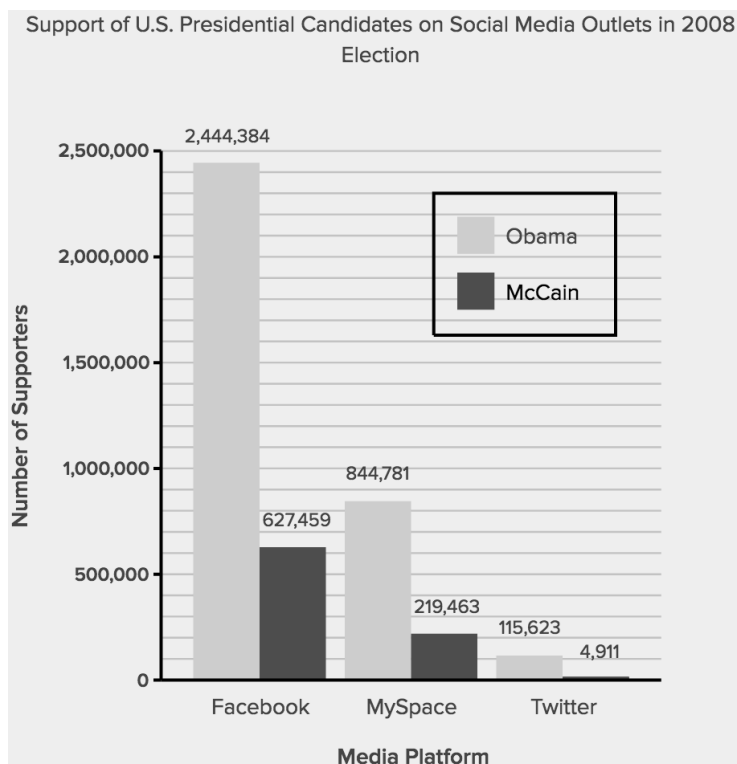
The first area of debate to be considered here is to what extent new media are able to put minor parties on a par with their larger counterparts, in terms of exposure. Minor parties are able to make use of new media technologies to disseminate information and promote themselves; typically, these new technologies not only provide broader exposure for minor parties but also act as additional channels through which to challenge major opponents and break into the political debate. However, cyber-pessimists argue that a higher number of communication channels does not equate with more democracy. Both minor and major parties tend to approach the Internet in utilitarian terms, using it as a tool to provide information about policies rather than as a new platform for the promotion of interaction and interorganizational links.

However, political cyber-optimists have criticized cyber-pessimists for being too extreme and maintain that new media might be the decisive element in pushing the democratic agenda of elections nowadays. For instance, based on data published by the Pew Research Center, sixty-six percentage of social media users have participated in at least eight online political activities, such as encouraging people to vote or posting their comments on politics through social media. Thus, Internet voters may shape election campaign agendas to some extent. The fact that Barack Obama obtained an electoral victory following a triumphant grassroots campaign and successful use of social media such as Facebook and MySpace is a case in point.

The third area of the debate to be considered here is the phenomenon of citizen (micro) blogging. Citizens are using social media, such as blogs, Facebook, Twitter, and Weibo, as a channel for participation in political discussions, aiming to directly or indirectly influence public concerns or even reshape the public agenda, promoting the democratic public sphere. Voltmer, in his empirical study of political communication, revealed the interdependencies between politicians, citizens and the media, and highlighted why some media are more successful channels for democratic public communication than others. Voltmer cites the example of a Chinese blogger named Lixiaode, who was the first successful case of using a blog as a 'watchdog' to expose numerous official corruptions in China in 2004 and 2005, thereby broadening the channel of political participation through blogs. This example illustrates the potential power of new media, which has already started to challenge the existing political system.

Looking at the three key areas of debate outlined above, it is apparent that there is nothing inherently democratic about the new media; the extent to which they are being used to enhance democracy depends on who is using them and why.

[But whether] or not new media technologies are enhancing democracy, they are the driving force behind some radical shifts which are taking place in politics, and these changes are inevitably bringing with them both benefits and limitations.



Adapted from David Angotti, "No Debate About It" ©2014 Search Engine Journal

1

The authors' central claim is that

- A) while there is disagreement about whether or not new media enhance democracy, all agree that they are changing politics.
- B) political candidates cannot influence elections without manipulating new media to benefit their campaigns.
- C) citizens must become more engaged in politics by blogging to truly exercise their democratic privileges.
- D) it is too soon to tell what new media's political effects will be, but they are generally thought to be positive.

2

As used in lines 1–2, “concerned with” most nearly means

- A) worried about.
- B) interested in.
- C) motivated by.
- D) uneasy about.

3

The author implies that cyber-optimists view the use of new media technologies by minor parties as

- A) the only solution to the problem of unfairness in elections.
- B) useful tools that may be dangerous in the wrong hands because of the limited understanding most people have of them.
- C) platforms that have been carefully developed by politicians in order to serve the needs of special interests.
- D) an opportunity to make the electoral process more democratic.

4

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

- A) lines 10–12 (“The first . . . exposure”)
- B) lines 12–14 (“Minor . . . themselves”)
- C) lines 18–20 (“However . . . democracy”)
- D) lines 20–24 (“Both . . . links”)

5

The expressions “cyber-optimists” and “cyber-pessimists” (line 4) primarily serve to

- A) frame the debate surrounding new media and politics with familiar oppositional terms.
- B) legitimize the author’s argument by creating a new kind of jargon to reference the players in this political field.
- C) clarify that there are only two possible positions to take regarding this issue, and they are opposed to one another.
- D) distinguish between major and minor parties with new terms that allow the reader to view them as positive and negative.

6

The author uses the Pew Research Center findings to imply that

- A) Barack Obama’s victory was possible only because of social media usage.
- B) new media users influence real-world political events to some degree.
- C) cyber-optimists take an overly positive stance towards new media.
- D) cyber-pessimists do not understand how new media outlets are used.

7

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

- A) lines 25–28 (“However . . . nowadays”)
- B) lines 28–33 (“For . . . media”)
- C) lines 33–37 (“Thus . . . point”)
- D) lines 38–44 (“The third . . . public sphere”)

8

The author discusses Lixiaode as an example of

- A) a new media user who made a political impact.
- B) an average person who misguidedly tried to change the world.
- C) a new kind of politician who began as an ordinary citizen.
- D) a scholar in political communications working to change the field.

9

Which of the following choices represents the greatest number of people?

- A) McCain's Facebook supporters
- B) Obama's Twitter followers
- C) McCain's MySpace friends
- D) Obama's MySpace friends

10

According to the passage, Obama's comparatively high usage of social media as depicted in the chart is an example of

- A) the links between new media use and political success.
- B) early adopters of technology benefiting from their timing.
- C) the importance of micro-blogging to reach supporters.
- D) minor candidates gaining exposure through new media.

11

We can infer from the chart that the majority of McCain supporters were

- A) active on Facebook.
- B) active on MySpace.
- C) active on Twitter.
- D) not active on any of these platforms.

# Social science

This passage is excerpted from Hiroshi Nittono, Michiko Fukushima, Akihiro Yano, and Hiroki Moriya, "The Power of Kawaii: Viewing Cute Images Promotes a Careful Behavior and Narrows Attentional Focus," ©2012 by Hiroshi Nittono, et al.

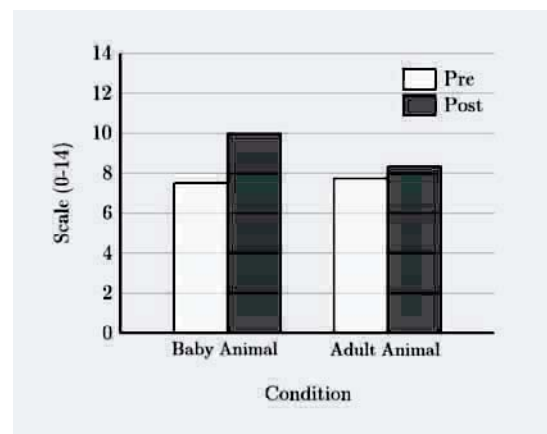
Cute things are popular worldwide. In particular, Japan's culture accepts and appreciates childishness at the social level. Various kinds of anime and character goods, such as Pokémon and Hello Kitty, which are often described as kawaii, are produced and exported to many countries. This phenomenon attracts considerable attention from various fields, including aesthetics and engineering. Kawaii is an attributive adjective in modern Japanese and is often translated into English as "cute." However, this word was originally an affective adjective derived from an ancient word, kawa-hayu-shi, which literally means face (kawa)-flushing (hayu-shi). The original meaning of "ashamed, can't bear to see, feel pity" was changed to "can't leave someone alone, care for." In the present paper, we call this affective feeling, typically elicited by babies, infants, and young animals, cute.

Cute objects are assumed to be characterized by baby schema. This is a set of features that are commonly seen in young animals: a large head relative to the body size, a high and protruding forehead, large eyes, and so forth. Lorenz assumed that responses to baby schema are innate processes and are triggered by elemental features of the stimuli. In humans, the stimuli are deemed cute, capture attention, bring a smile to the viewer's face, and induce motivation and behavior for approach and caregiving. Baby schema modulates perception and attention at early stages of visual processing and activates the reward system of the brain. From an ethological perspective, it is understandable that cute things are treated favorably. However, little is known about whether encountering a cute object influences the subsequent behavior of the beholder. Because cute things produce positive feelings, their influence may extend to other aspects of behavior.

Sherman, Haidt, and Coan reported two experiments showing that performance in a fine motor dexterity task (the children's game Operation) improved after participants viewed a slide show of cute images (e.g., puppies and kittens) more than after they viewed images that were not as cute (e.g., dogs and cats). The performance measure was the number of plastic body parts that participants removed successfully from the body of the patient depicted on the game board using tweezers without touching the edges of the compartments. The improvement in the accuracy of this task can be interpreted as an index of increased attention to and control of motor actions. Sherman et al. explained this effect in terms of the embodied cognition perspective. That is, the tenderness elicited by cute images is more than just a positive affective feeling state. It can make people more physically tender in their motor behavior. Although the results are intriguing, the mechanism of performance improvement remains unclear for two reasons. First, the time to complete the task was not measured. Better performance could be achieved either through slow and deliberate actions or through quick and accurate actions. Measuring the performance speed would help to explain the underlying mechanism. Second, only one type of task was used. If viewing baby animals induced a behavioral tendency toward protection and caregiving, performance improvement could be specific to a care-related task. The operation task used by

- 60 Sherman et al. suggests caregiving because the player is expected to act as a doctor who helps the patient depicted on the game board with removing foreign objects from the patient's body. Using different types of tasks would elucidate the cause of performance improvement.
- 65 Recently, Sherman and Haidt challenged the classic view that cuteness is an innate releaser of parental instincts and caregiving responses. Instead, they proposed that perceiving cuteness motivates social engagement and primes affiliative, friendly tendencies. This attitudinal change is assumed to be linked with cognitive processes related to mentalizing (i.e., attributing mental states to agents) and sometimes indirectly leads to increased cares. If cuteness-induced behavioral carefulness is caused by a heightened motivation for social interaction, the effect would not be found in simple perceptual-cognitive tasks that do not suggest social interaction.

Mean Scores on the *Operation* Task Before and After Viewing Images.



1

The authors' central claim is that

- A) cuteness provokes the same emotional responses around the world.
- B) encountering a cute object may lead to changes in behavior.
- C) studies of cuteness should include tasks that involve social interaction.
- D) cuteness elicits feelings of tenderness in test subjects.

2

The authors mention Pokémon and Hello Kitty in order to

- A) provide examples of popular kawaii products from Japan.
- B) clarify an earlier statement by showing that some products use cuteness in their marketing.
- C) demonstrate that cute products are more likely to be exported than other products.
- D) support the claim that kawaii products are found in various fields.

3

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

- A) inner.
- B) chemical.
- C) partial.
- D) essential.

4

The words “capture” and “induce” (lines 23–24) primarily serve to

- A) ironically depict the unclear effects of cute images on test subjects.
- B) characterize the cute stimuli used in tests in unusually strong terms.
- C) indicate that cute stimuli can have a forceful impact on the viewer.
- D) provide a formal tone to contrast with the rest of the passage’s informal tone.

5

The authors imply that they see Sherman, Haidt, and Coan’s experiments as mainly

- A) interesting but unnecessary.
- B) sloppy and inconclusive.
- C) suggestive but incomplete.
- D) inventive and groundbreaking.

6

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

- A) lines 43–45 (“The . . . actions”)
- B) lines 45–46 (“Sherman . . . perspective”)
- C) lines 46–48 (“That . . . state”)
- D) lines 49–51 (“Although . . . reasons”)

7

The authors imply that Sherman, Haidt, and Coan’s Operation experiment would have been improved by changing the

- A) methodology.
- B) test subjects.
- C) experimental setting.
- D) researchers.

8

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

- A) lines 56–59 (“If . . . task”)
- B) lines 59–63 (“The . . . body”)
- C) lines 63–64 (“Using . . . improvement”)
- D) lines 67–69 (“Instead . . . tendencies”)

9

According to the graph, the second-highest overall score in the study was achieved by the participants who

- A) had just viewed pictures of baby animals.
- B) had just viewed pictures of adult animals.
- C) were about to view pictures of adult animals.
- D) were about to view pictures of baby animals.

10

According to the passage, one explanation for the performance of the subjects in the graph's top-scoring group is that the

- A) test took place under timed conditions, forcing the subjects to be more accurate.
- B) subjects had to perform several kinds of tasks, making them consider each one more carefully.
- C) tenderness elicited by viewing the images made them more careful in performing the task.
- D) subjects experienced a heightened motivation for social interaction.

11

The average initial score of participants who were later shown the adult animal pictures was closest to which number?

- A) 7
- B) 8
- C) 9
- D) 10

This passage is adapted from Jamshid J. Tehrani, "The Phylogeny of Little Red Riding Hood." © 2013 by Jamshid J. Tehrani.

The publication of Jacob and Wilhelm Grimm's Children's and Household Tales two hundred years ago sparked enormous academic interest in traditional stories and helped establish folklore as a field for academic inquiry. One of the most unexpected discoveries to emerge from these studies was the recurrence of many of the same plots in the oral traditions associated with different societies. Researchers have examined the distributions of common plot elements within and across regions to make inferences about past migration and cross-cultural contact.

Other researchers have sought to classify similar folktales from different oral literatures into distinct "international types" based on consistencies in their plots. The most comprehensive reference work in this field, the Aarne-Uther-Thompson (ATU) index, identifies more than two thousand international types distributed across three hundred cultures.

This study proposes an approach to studying cross-cultural relationships among folktales that employs quantitative methods of phylogenetic analysis. Phylogenetics was originally developed to investigate the evolutionary relationships among biological species, and has become increasingly popular in studies of cultural phenomena. In each case, the aim of a phylogenetic analysis is to construct a graph that represents relationships of common ancestry inferred from shared inherited traits. The study focuses on one of the most famous stories in the folktale literature, ATU 333 – "Little Red Riding Hood," believed to be based on an old folktale known as "The Story of Grandmother."

Highly similar stories to "Little Red Riding Hood" have been recorded in various non-western oral literatures. These include a folktale that is popular in East Asia known as "The Tiger Grandmother," in which a group of siblings spend the night in bed with a tiger who poses as their grandmother. Despite similarities, it is not clear whether these tales can in fact be classified as ATU 333. Some writers suggest they may belong to another international tale type, ATU 123, "The Wolf and the Kids." In this tale, a goat warns her kids not to open the door while she is out in the fields, but is overheard by a wolf. When she leaves, the wolf impersonates her and tricks the kids into letting him in. Although ATU 123 is believed to be closely related to ATU 333, it is classified as a separate international tale type.

The ambiguities surrounding the classification of the East Asian tales exemplify the problems of current folklore taxonomy. The present study addresses two key questions: Can the tales described above be divided into phylogenetically distinct international types? If so, should the East Asian tales be classified as variants of ATU 333 or ATU 123?

Data for the study were drawn from 58 variants of ATU 333/123 available in English translation from 33 populations. Relationships among the tales were reconstructed using three methods of phylogenetic analysis. The analyses focused on 72 plot variables, such as the tricks used by the villain to deceive the victim.

Overall, the results demonstrate a high degree of consistency in the groupings returned by the analyses. All three analyses identified "Little Red Riding Hood" and "The Story of Grandmother" as a single tale type that is distinct from "The Wolf and the Kids." The East Asian tales, meanwhile, did not cluster with ATU 333 or ATU 123. One intriguing possibility is that the East Asian tales represent a sister lineage that diverged from ATU 333 and ATU 123 before they evolved into two distinct groups.

Shared traits of events that happen between East Asian tales, ATU 123, and ATU 333

Trait (character number)	East Asian	ATU 123	ATU 333
Voice operation (27)	2	10	0
Hand test (30)	8	10	0
Dialogue with the villain (32)	7	0	10
Rescue by passer-by (45)	2	0	7
Excuse to escape (47)	9	0	3

Adapted from The Phylogeny of Little Red Riding Hood, ©2013 by Jamshid J. Tehrani.

1

The primary purpose of the passage is to

- A) discuss the reasons that folk tales are similar across cultures and societies.
- B) highlight the merits of a traditional approach to studying the history of folk tales.
- C) show how a new approach to tracing relationships among folktales helps address a particular example.
- D) emphasize the similarities among folk tales throughout history and all over the world.

2

The author's reference to Jacob and Wilhelm Grimm's Children's and Household Tales in paragraph 1 primarily serves to

- A) provide a well-known reference point to introduce the topic of the study of folktales.
- B) offer evidence that folktales should be taken seriously as a subject of academic study.
- C) introduce the argument that most folktales from across cultures and societies really are very similar.
- D) advise readers that they should familiarize themselves with the work before they can understand the study.

3

The passage suggests that folktales and biological species are similar in that

- A) there are more than two thousand of each, distributed across much of the planet.
- B) they can be measured on the same scale.
- C) different groups can be traced back to a common ancestor.
- D) most cultural phenomena are based on underlying biological processes.

4

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

- A) lines 13-16 ("The ... cultures")
- B) lines 17-19 ("This ... analysis")
- C) lines 19-22 ("Phylogenetics ... phenomena")
- D) lines 22-25 ("In ... traits")

5

As used in line 22, "phenomena" most nearly means

- A) anomalies.
- B) productions.
- C) paradoxes.
- D) miracles.

6

The author implies that "The Tiger Grandmother" should be classified with which tale or tales mentioned in the last paragraph?

- A) "Little Red Riding Hood"
- B) "The Story of Grandmother"
- C) "The Wolf and the Kids"
- D) "The East Asian Tales"

7

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

- A) lines 29-30 ("Highly ... literatures")
- B) lines 30-33 ("These ... grandmother")
- C) lines 35-37 ("Some ... Kids")
- D) lines 40-42 ("Although ... type")

8

In line 36, "belong to" most nearly means

- A) be suitable for.
- B) be the property of.
- C) be grouped with.
- D) be an attribute of.

9

The chart best supports the author's discussion of the study by showing

- A) the extreme differences between the East Asian tales and the tales classified as ATU 123 and ATU 333.
- B) that the East Asian tales share traits with the tales in ATU 123 and ATU 333 but diverge from both.
- C) the five different traits that are present in tales from around the world.
- D) that the Hand test and Excuse to escape are featured most prominently in the East Asian tales.

10

According to the chart, which trait is NOT present both in the East Asian tales and in those of ATU 333?

- A) Hand test
- B) Dialogue with the villain
- C) Rescue by passer-by
- D) Excuse to escape

11

Based on information in the passage and the chart, which two traits are both present in the the tale "The Wolf and the Kids"?

- A) Voice operation and dialogue with the villain
- B) Hand test and rescue by passer-by
- C) Dialogue with the villain and excuse to escape
- D) Voice operation and hand test

This passage is adapted from Madhuvanthi Kannan, "Overworking Your Brain Can Spark Ideas." ©2015 by Scientific American.

If you walk down to the office gallery at Pearlfisher Inc., a design agency, you are bound to hear the unmistakable cluck of plastic balls colliding. At first, you might dismiss it as the sound of employees chilling out on a ping pong game. What you see next might take your breath away – a huge ball pit filled with 81,000 white plastic balls. But frolicking in the pit are not preschoolers or kindergartners. They are in fact corporate managers, dressed in business suits, in an afternoon brainstorming session.

Companies relying on innovation go to astonishing lengths to imbue creativity in their staff. Jump In!, the wacky brainchild of Pearlfisher's creative strategist, is built on the premise that interleaving work and play can spark creativity in grown-ups, just like it did back in school days.

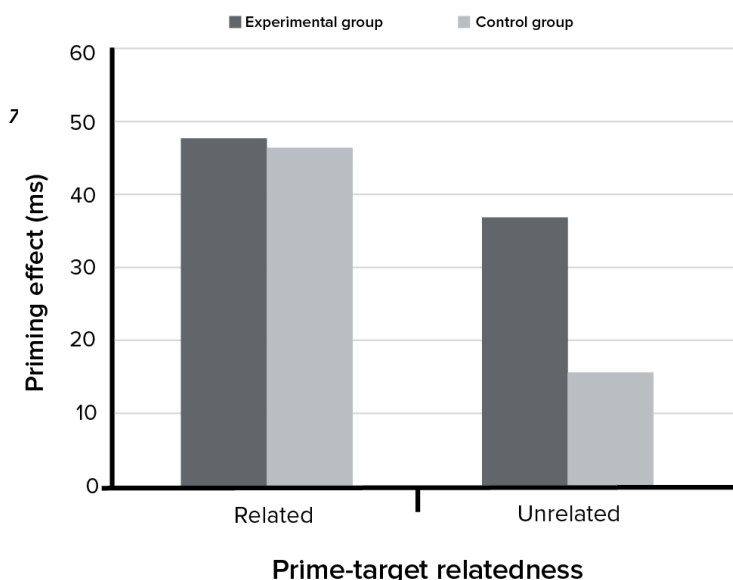
But it turns out that mental exhaustion from overwork can itself unleash creativity. When we are tired, our mind can be too weary to control our thoughts, and eccentric ideas that might normally be filtered out can bubble up, suggests a recent study by Rémi Radel at the University of Nice. This means that perhaps creative ideas can be hatched at the workplace, right when we feel drained from a mental overload.

In their study, Radel and colleagues overtaxed the minds of a group of undergrads by having them perform a computerized task that demanded attention: finding the direction of a center arrow by ignoring the directions of surrounding arrows. The task was iterated across 2000 trials. In conflict trials, the center and surrounding arrows pointed in opposite directions whereas in non-conflict trials, all arrows pointed in the same direction. The controls and test subjects faced conflict in 10% and 50% of the trials, respectively. After the students finished the task, the scientists measured their creativity in verbal tests. First, they asked the students to enlist multiple, innovative uses for common objects, such as paperclip, newspaper, shoe. Next, they tested the students' ability to connect unrelated words.

They presented the students with a "priming word" followed by "target word" – for example, they flashed the word tiger followed by the word loni, jumbled from lion – and asked the students to vote whether the target word was a real or a non-existent word. Radel found that students who took the rigorous attention task turned out to be more creative than others who had taken milder versions of the task. These students were also more likely to connect unrelated words in the word association test. They identified more non-existent words as real words especially when the prime-target pairs were seemingly related, such as tiger and loni. They perceived loni as lion when it appeared after tiger and hence, called it a real word. Their ability to associate unrelated words came from a reduced filtering of irrelevant information – here, for instance, the priming word tiger – from the mind.

Radel's attention task induced creativity in the students by exhausting their inhibition, which is the brain's ability to sift out unwanted information from the conscious mind. Although inhibition is essential for day-to-day activities such as problem-solving and focusing on tasks, it stifles creative thinking by gating out eccentric thoughts and ideas. Being creative is not just about achieving a state of low inhibition, but about tweaking inhibition for brief stints without losing control. Harvard psychologist Shelly Carson calls this process "flexing the brain." She says that creative people can turn down the volume of inhibition to let novel ideas inspire them, and then, turn the volume back up to put their ideas to meaningful use.

For beginners, Radel's technique of overtaxing the brain, to find a sweet window for a creative spell, may be a good place to start. As we go through our day, juggling multiple tasks, our mind works hard to stay focused on a single task. There is the added pressure to keep distractions at bay – meetings, e-mails, news updates. At the end of it all, we are left feeling exhausted. At such times, instead of shutting down and relaxing, we should perhaps learn to capitalize on the mental fatigue and try to kindle our creative genius.



1

The primary purpose of the passage is to

- A) discuss findings that support a particular conclusion about creativity
- B) illuminate certain methods used to enhance creativity in the workplace.
- C) resolve a debate about how fatigue affects a brain's ability to function.
- D) illustrate how a positive outlook boosts a person's creativity.

2

In the first paragraph of the passage, the main effect of the phrases "preschoolers or kindergartners" and "corporate managers" is to

- A) critique an unusual business practice.
- B) present a recommendation on appropriate managerial conduct.
- C) emphasize a contrast between an activity and its participants.
- D) highlight an observation on the prevalence of childish behavior in many adults.

3

As used in line 42, "milder" most nearly means

- A) more sensitive.
- B) easier.
- C) blander.
- D) weaker.

4

The passage suggests that one reason subjects in the control group connected fewer unrelated words on average than did subjects in the experimental group is that the subjects in the control group were more likely to

- A) become distracted due to mental exhaustion.
- B) demonstrate their creativity in unexpected ways.
- C) exclude the priming words from conscious thought.
- D) mistake the jumbled words for real words.

5

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

- A) lines 35–39 ("They presented . . . word")
- B) lines 42–43 ("These . . . test")
- C) lines 46–47 ("They perceived ... word")
- D) lines 47–50 ("Their ... mind")

6

In the context of the passage as a whole, the sixth paragraph lines 51–62 primarily serve to

- A) clarify the meaning of the term "inhibition."
- B) reflect on the results of Radel's study.
- C) explain Shelly Carson's notion of "flexing the brain."
- D) provide guidance on how a person can employ creative strategies.

7

It can most reasonably be inferred that the author regards mental exhaustion as

- A) a potential opportunity for creative inspiration that should be pursued.
- B) an unpleasant consequence that results from performing mundane activities.
- C) a state that is less inclined to artistic invention than a state of mental alertness.
- D) the ideal condition in which to focus on multiple tasks.

8

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

- A) lines 11–14 ("Jump . . . days")
- B) lines 16–19 ("When . . . Nice")
- C) lines 65–68 ("As . . . updates")
- D) lines 69–71 ("At such . . . genius")

9

The graph indicates that the average priming effect of unrelated words for subjects in the experimental group was nearest in milliseconds (ms) to

- A) 10.
- B) 20.
- C) 30.
- D) 40.

10

The graph shows that on average, the priming effects of related words for subjects in the experimental group and the control group were

- A) similar.
- B) equivalent.
- C) variable.
- D) unpredictable.

11

The graph most directly refers to the component of the study summarized in which lines of the passage?

- A) lines 22-25 ("In their ... arrows")
- B) lines 29-30 ("The controls ... respectively")
- C) lines 32-33 ("First ... shoe")
- D) lines 33-34 ("Next ... words")

This passage is adapted from David Z. Hambrick, "What Makes a Prodigy?" ©2015 by Scientific American.

What explains prodigies? How can a person accomplish so much so fast? Psychologists have long debated this question. According to one account, it is possible that most anyone could be a prodigy, with the right environment. As the late psychologist Michael Howe argued, "With sufficient energy and dedication on the parents' part, it is possible that it may not be all that difficult to produce a child prodigy." Extraordinary opportunity is indeed a theme that runs through the biographies of many prodigies.

However, recent research indicates that basic cognitive abilities known to be influenced by genetic factors also play a role in prodigious achievement. In the most extensive study of prodigies to date, the psychologist Joanne Ruthsatz and her colleagues administered the Stanford Binet intelligence test to 18 prodigies—five in art, eight in music, and five in math. There was a wide range of IQs in the sample, from 100—the average for the general population—to 147—well above the usual cutoff for "intellectually gifted." However, with an average score of 140 (above the 99th percentile), nearly all of the prodigies did extraordinarily well on the tests of working memory. Analogous to the central processing unit of a computer, working memory is a cognitive system responsible for carrying out the mental operations involved in complex tasks such as problem solving and language comprehension. It is what you use when you compute a tip for a dinner check in your head, or when you hold in mind the steps of a complex skill you are trying to learn.

Working memory is measured with tests that involve both remembering information for a short period of time and manipulating that information in some way. For example, in backward digit span, the test-taker is read a sequence of random digits, such as 8 3 2 9 5 1 3 7 5 0. The goal is then to recall the digits back in the reverse order—0 5 7 3 1 5 9 2 3 8 for the preceding sequence. As measured by tests like these, people differ substantially in the capacity of their working memory system—some people have a "bigger" working memory than other people. Moreover, this variation is substantially influenced by genetic factors, with estimates of heritability typically around 50%.

With an average score of 148, the music prodigies in the Ruthsatz study were especially high in working memory (the average for the math prodigies was 135 and for art prodigies was 132). In fact, all eight of the music prodigies were at or above the 99th percentile, and four were at or above the 99.9th percentile. The odds of eight randomly selected people scoring this high on a test are essentially zero. Ruthsatz and colleagues concluded that a superior working memory is one characteristic that prodigies in art, music, and math have in common.

Prodigies also exhibit an unusual commitment to their domain, which the developmental psychologist Ellen Winner calls a "rage to master." Winner describes children who possess this quality in the following terms: "Often one cannot tear these children away from activities in their area of giftedness, whether they involve an instrument, a computer, a sketch pad, or a math book. These children have a powerful interest in the domain in which they have high ability, and they can focus so intently on work in this domain that they lose sense of the outside world." Winner argues that this

single-mindedness is a part of innate talent rather than a cause of it—a convergence of genetically-influenced aptitude, interest, and drive that predisposes a person to obsessively engage in some activity.

Consistent with Winner's thesis, results of a recent study of more than 10,000 twins by Miriam Mosing, Fredrik Ullén, and their colleagues at Sweden's Karolinska Institute revealed that a common set of genes influence both music aptitude and the propensity to practice—an example of a phenomenon known as genetic pleiotropy, which occurs when one gene (or set of genes) influences multiple traits.

Taken together, these findings add to a growing body of evidence indicating that exceptional performance in music, the arts, sports, science, and other complex domains is, at its core, determined multiply—the product of both environmental factors and of genetically-influenced traits. More generally, psychologists who study expertise are moving beyond the question of whether experts are "born" or "made." As the psychologist Jonathan Wai put it, it is increasingly clear that "Experts are born, then made."

Prodigies' Mean Scores on the Stanford-Binet Intelligence Test by Domain

	Full Scale IQ Standard Score	Working Memory Standard Score
Art	108.4	132
Music	129.14	148.38
Math	139.8	134.8
Mean Total Score	126.18	140.06

Adapted from Joanne Ruthsatz et al. "The Cognitive Bases of Exceptional Abilities in Child Prodigies by Domain: Similarities and differences." ©2014 by Elsevier Inc.

1

The main purpose of the first paragraph is to

- A) present the belief that the surroundings in which a child is raised could cause a child to become a prodigy.
- B) characterize a debate among psychologists as to why prodigies possess certain talents that the general population lacks.
- C) examine the advanced cognitive abilities and privileges that many prodigies share.
- D) detail the astonishing speed with which prodigies can complete a task.

2

In the passage, the author mentions calculating a tip and learning the steps of a complex skill primarily in order to

- A) provide examples of tasks that involve the use of working memory.
- B) indicate two practices at which prodigies generally excel.
- C) reinforce the idea that any person can be a prodigy.
- D) identify two tasks that prodigies completed on the intelligence test.

3

As used in line 35, "capacity" most nearly means

- A) qualification.
- B) number.
- C) duty.
- D) extent.

4

Which choice provides the best evidence that the scores received by the prodigies in the Ruthsatz study cannot be attributed entirely to chance?

- A) lines 37-39 ("Moreover ... 50%")
- B) lines 40-43 ("With ... 132")
- C) lines 43-45 ("In fact ... percentile")
- D) lines 45-46 ("The odds ... zero")

5

In the context of the quotations by Ellen Winner, the main effect of the word "rage" in line 52 is to

- A) acknowledge the resentment that prodigies may feel as a result of their gifts.
- B) suggest that the lives of prodigies are frequently characterized by conflict.
- C) emphasize the extreme nature of an aspect of prodigies' behavior.
- D) indicate that prodigies have intensely active imaginations.

6

In line 61, "convergence" most nearly means

- A) movement.
- B) approach.
- C) union.
- D) succession.

7

Based on the passage, it can most reasonably be inferred that genetics help to determine prodigies' skills and the

- A) likelihood that the prodigy will be motivated to improve their skills.
- B) decision to dissociate from their peers who lack similar skills.
- C) environments that parents create to help their children who are prodigies to advance.
- D) attitude that prodigies have toward the areas of their giftedness as they grow into adults.

8

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

- A) lines 52-56 ("Winner ... book")
- B) lines 56-59 ("These ... world")
- C) lines 64-70 ("Consistent ... multiple traits")
- D) lines 71-75 ("Taken ... genetically-influenced traits")

9

According to the table, the highest mean Full Scale IQ standard score attained by a group of prodigies in a single domain was

- A) 134.8
- B) 139.8
- C) 140.06
- D) 148.38

11

The data in the table best support a finding that is summarized in which lines of the passage?

- A) lines 12-15 ("In the ... math")
- B) lines 28-30 ("Working ... way")
- C) lines 34-37 ("As measured ... people")
- D) lines 46-49 ("Ruthsatz ... common")

10

Which comparison of the prodigies' scores is best supported by information in the table?

- A) While the math prodigies earned a higher mean Full Scale IQ standard score than the art prodigies, the art prodigies earned a higher mean Working Memory standard score.
- B) While the music prodigies earned the highest mean Working Memory standard score of prodigies in any domain, they earned a lower Full Scale IQ standard score than their math counterparts.
- C) While the art prodigies earned a mean Working Memory standard score higher than that of the average for the general population, their mean Full Scale IQ standard score was slightly lower than the average score of the general population.
- D) While prodigies in all three domains earned high Working Memory standard scores, their mean Full Scale IQ standard scores were all lower than researchers had expected.

Adapted from Colin Butler, "Human Carrying Capacity and Human Health." © 2004 by Colin Butler. The passage refers to carrying capacity, or the maximum population size of a species that an environment can support.

The question of human overpopulation and its relationship to human carrying capacity has been controversial for over two centuries. In 1798 the Reverend Thomas Malthus put forward the hypothesis that population growth would exceed the growth of resources, leading to the periodic reduction of human numbers by either "positive checks", such as disease, famine, and war, or "preventive checks", by which (in the absence of contraception) Malthus meant restrictions on marriage. This "Malthusian view" was rapidly accepted by most politicians, demographers, and the general public, and remained popular until fairly recently.

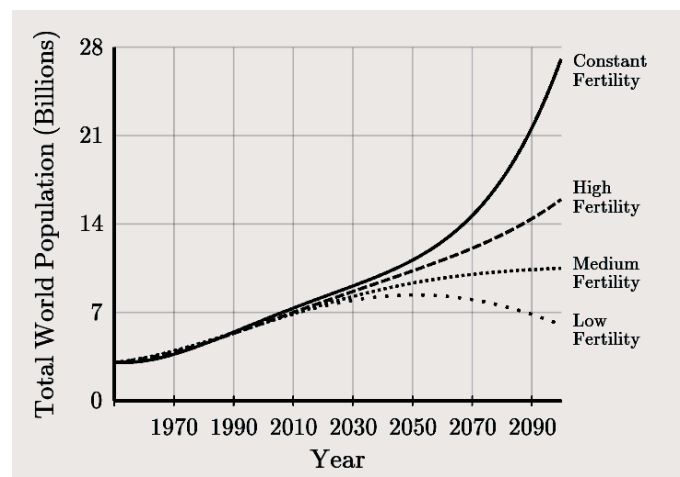
Malthus's worst fears were not borne out through the century following his death in 1834—food production largely kept pace with the slowly growing global population. However, soon after 1934, the global population began to rise steeply as antibiotics, vaccines, and technology increased life expectancy. By the 1960s, concerns of a mismatch between global population and global food supply peaked—expressed in books such as Paul Ehrlich's 1968 *The Population Bomb*. This book predicted a future scarred by increasing famine, epidemic, and war—the three main Malthusian positive checks.

In 1966, United States President Lyndon Johnson shipped wheat to India to avert a famine on the condition that the country accelerate its already vigorous family planning campaign. Johnson was part of an unbroken series of US presidents concerned with the harmful effects of rapid population growth in developing countries. This line extended (at least) from John F. Kennedy to Jimmy Carter. George H. W. Bush was also sympathetic to this view, prior to becoming vice president in 1981.

But the 1970s surprised population watchers. Instead of being a period shadowed by calamitous famine, the new crop strains introduced by the "Green Revolution" (especially grains such as rice, wheat, and maize) caused a dramatic increase in the global production of cereals, the main source of energy in the global diet. Among the development community, despair turned into cautious optimism. By the end of the decade, the public health community felt sufficiently empowered to proclaim "Health for All by the Year 2000". Average life expectancy continued to zoom upwards almost everywhere.

The introduction of safe contraception contributed to a rapid fertility decline in many countries. But while the rate of global population growth declined from its peak in the late 1960s, the absolute increment of increase in annual global population continued to grow. Most population-related scientists, including food scientists and demographers, as well as US President Jimmy Carter, continued to be very concerned about global overpopulation. In 1970, the father of the Green Revolution, the agricultural scientist Norman Borlaug, was awarded the Nobel Peace Prize. In his Nobel lecture, Borlaug warned that the success of the Green Revolution would buy a breathing space for humankind of three decades, unless equivalent action was taken to reduce fertility rates.

Historical and Projected World Population Growth, 1950-2100; UN Estimates Based on Rates of Fertility.



Adapted from Elizabeth Leahy Madsen, "How Did We Arrive at Seven Billion - and Where Do We Go From Here?" ©2011 by Environmental Change and Security Program, Woodrow Wilson Informational Center for Scholars.

1

The primary purpose of the passage is to

- A) assert that global overpopulation will cease to be a threat because new methods of food supply and contraception will keep it at bay indefinitely.
- B) raise the argument that the global population has increased in the twentieth century due to vaccines, antibiotics, and technological advances in health care.
- C) introduce the idea that global population growth has continued to be a serious concern despite advances in agriculture and contraception.
- D) emphasize that government policies concerning family planning and food production are absolutely necessary in keeping global population growth under control.

2

The author implies that Reverend Thomas Malthus was influential because he

- A) correctly predicted the future outcomes of global overpopulation.
- B) developed a framework for balancing population growth and resources.
- C) was right about a potential lack of food even though he was wrong about overpopulation.
- D) invited controversial debates regarding population control and its risks.

3

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

- A) lines 3–9 (“In . . . marriage”)
- B) lines 9–11 (“This . . . recently”)
- C) lines 12–20 (“Malthus’s . . . population”)
- D) lines 15–17 (“However . . . expectancy”)

4

In the second paragraph (lines 12–20), the words “fears,” “concerns” and “scarred” primarily serve to

- A) characterize potential outcomes of the impending global shortage of cereal grains.
- B) emphasize the anxiety and uncertainty surrounding predictions regarding overpopulation.
- C) contrast critical predictions with an ultimately positive outcome resulting from increased life expectancies.
- D) establish a history of apprehension regarding overpopulation and its influence on incorrect future prognoses.

5

In line 30, “sympathetic to” most nearly means

- A) caring for.
- B) agreeable with.
- C) supportive of.
- D) compassionate toward.

6

The author’s discussion of the “Green Revolution” in paragraph 4 (line 34) primarily serves to

- A) provide a positive contrast to the dire predictions made elsewhere in the passage.
- B) reassure readers that unexpected agricultural inventions mean they have nothing to fear.
- C) offer evidence that alternative outcomes to overpopulation and famine are possible and likely.
- D) warn readers not to be lulled into a false sense of security by a small number of beneficial agricultural advances.

7

It can reasonably be inferred that Borlaug viewed the dramatic increase in cereal production as

- A) a smart move certain to eradicate future famines and keep the global population balanced.
- B) an untested approach based on the belief that the risk of overpopulation outweighs the benefits of reducing hunger.
- C) a quick fix that will be unsuccessful in keeping the global population in check even if additional measures are undertaken.
- D) a partial solution to global overpopulation that will fail if other factors are not addressed.

8

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

- A) lines 41–42 (“Average . . . everywhere”)
- B) lines 44–47 (“But . . . grow”)
- C) lines 47–50 (“Most . . . overpopulation”)
- D) lines 50–56 (“In . . . rates”)

9

How does the graph relate to the passage?

- A) It demonstrates the truth of the assertion that fertility rates will match increasing food production over the next century.
- B) It illustrates the point that the rate of global population growth has declined since the 1960s due to contraception.
- C) It provides support for the idea that there will be a drastic increase in global population if fertility rates remain constant.
- D) It reinforces the claim that the Green Revolution will be able to meet the needs of a rising population.

10

According to the graph, if the High Fertility rate is maintained

- A) the world's population will return to 1950 levels by the year 2100.
- B) the world's population will roughly double between 2010 and 2100.
- C) the world's population will remain constant between 2010 and 2100.
- D) the world's population will approximately quadruple between 2010 and 2100.

11

The graph indicates that the population projections for Constant Fertility and High Fertility rates begin to diverge in which time span?

- A) 2000–2020
- B) 2020–2040
- C) 2040–2060
- D) 2060–2080

## Social science

This passage is excerpted from Carly Wood, Valier Gladwell and Jo Barton, "A Repeated Measures Experiment of School Playing Environment to Increase Physical Activity and Enhance Self-Esteem in UK School Children." © 2014 by Wood et al.

The health benefits of engaging in physical activity (PA) during childhood include enhanced fitness, cognitive function and bone health; reduced body fatness, motor skill development, and favourable cardiovascular and metabolic disease risk profiles. Being active during childhood can also improve self-esteem and reduce symptoms of anxiety and depression. Participation in PA in youth is of great importance as PA may track into adulthood where adequate levels of PA are protective against many chronic diseases. However, in the UK approximately 75% of boys and 80% of girls aged 5–10 years are not meeting the daily recommendation of 60 minutes of moderate to vigorous physical activity . . .

Unstructured play is also an essential part of childhood which enables children to develop a relationship with their surrounding environment and enhances social skills, coordination and strength. Outdoor environments facilitate play and are associated with increased levels of PA. Thus, children should be provided with daily opportunities to play outdoors. The school environment provides such an opportunity through the provision of playtime. Playtime normally takes place on the concrete school playground and lasts for at least one hour per day. However, universally playtime is reported to make relatively small contributions to children's overall daily activity requirements. In the UK, only one known study has reported the contribution of playtime to overall activity requirements, with contributions being as low as 4.5%.

A number of studies have successfully increased playtime PA through the introduction of interventions such as sports or games equipment, playground markings, fitness breaks and playground structures. However, these types of interventions tend to facilitate structured rather than unstructured PA. Unstructured PA is essential to childhood development and therefore needs to be encouraged during playtime.

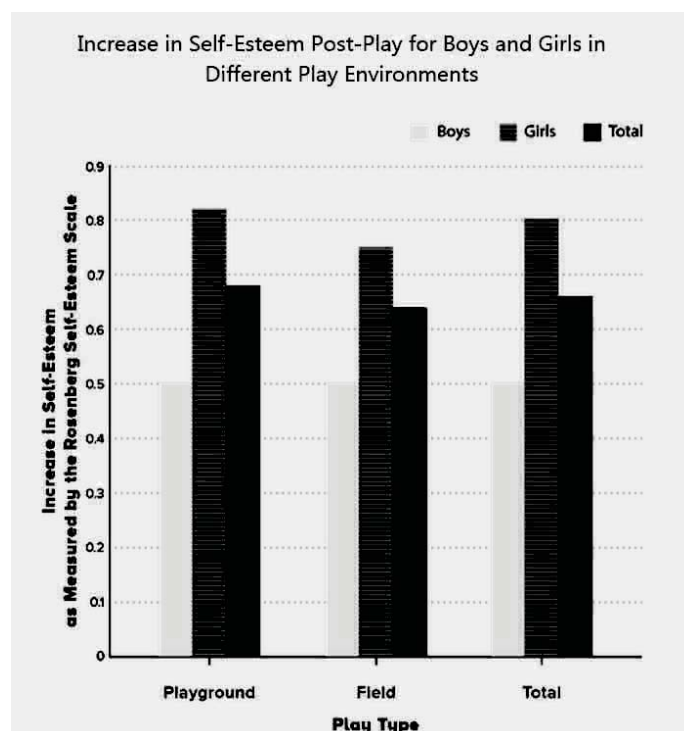
Natural environments can encourage unstructured play and may therefore play a role in facilitating unstructured PA during playtime. Natural environments provide large open spaces which encourage individuals to be active, whilst areas lacking nature may restrict PA due to limited space and parental fears over crime and road traffic. Children report a preference for play in natural environments, with nature facilitating more imaginative and inventive play. Furthermore, adolescents living in urban settings with access to green spaces such as parks are more likely to be physically active than their peers without park access, indicating that all forms of nature can be used as a tool for engaging youth in PA. Thus, if school playtime were performed on the school field it is possible that children's PA levels would be increased. To date, there is a lack of data quantifying the impact of natural environments on levels of PA in children, particularly within the school setting.

Performing PA in a natural environment ("Green Exercise") has also been demonstrated to provide improvements in self-esteem in adults, whether participants are simply viewing scenes of nature or directly interacting with natural environments. Studies in adolescents and children suggest that Green Exercise has no such additive effect on self-esteem compared to exercise in other

environments. However, the only known study in children examined the impact of a green playtime intervention consisting of orienteering.\* The task-oriented, structured nature of orienteering may not facilitate the green exercise effect. Unstructured free play in a natural environment may allow greater interaction with the environment, thus benefiting self-esteem.

\*A competitive sport in which runners have to find their way across rough country with the aid of a map and compass.

Increase in Self-Esteem Post-Play for Boys and Girls in Different Play Environments



The starting self-esteem score was 28.8, out of a possible 40.

Adapted from Carly Wood, Valier Gladwell and Jo Barton, "A Repeated Measures Experiment of School Playing Environment to Increase Physical Activity and Enhance Self-Esteem in UK School Children," originally published in 2014.

1

The main purpose of the passage is to

- A) defend an unpopular belief.
- B) confirm a previously untested hypothesis.
- C) summarize various studies of a social condition.
- D) debunk common misconceptions surrounding an issue.

2

As used in line 8, “track” most nearly means

- A) carry.
- B) assign.
- C) monitor.
- D) linger.

3

The statistics about UK children (lines 10–13) primarily serve to

- A) encourage readers to become more active.
- B) call attention to a particular situation.
- C) transition to a discussion of unstructured and structured play.
- D) introduce an argument that the authors will later contradict.

4

The author implies that studies that have increased playtime physical activity are

- A) accurate, because they depict the benefits of play across all social groups.
- B) correct, because they have allowed for the purchase of playground structures and other equipment to help facilitate play.
- C) faulty, because they ignore the importance of natural environments.
- D) limited, because they do not study socio-emotional development.

5

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

- A) lines 29–32 (“A number . . . structures”)
- B) lines 32–33 (“However . . . PA”)
- C) lines 34–35 (“Unstructured . . . playtime”)
- D) lines 36–38 (“Natural . . . playtime”)

6

What does the author claim about “Green Exercise” (lines 53–54)?

- A) It benefits adults’ self-esteem but its effects on children have not been fully determined.
- B) Looking at images of natural environments is the best way to improve self-esteem.
- C) Adolescents do not benefit from green exercise in the same way that adults do.
- D) Self-esteem can only rise through direct interaction with the environment.

7

What does the author imply about physical activity in a natural environment?

- A) Scientific studies have determined that physical activity can only benefit self-esteem in adults.
- B) The relationship between physical activity in nature and self-esteem requires further study.
- C) Although it has been studied, physical activity in a natural environment’s effects are unclear in both children and adults.
- D) Physical activity in a natural environment benefits self-esteem in both children and adults.

8

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

- A) lines 57–60 (“Studies . . . environments”)
- B) lines 60–62 (“However . . . orienteering”)
- C) lines 62–64 (“The task-oriented . . . effect”)
- D) lines 64–66 (“Unstructured . . . self-esteem”)

9

Which of author’s claims about self-esteem does the chart best support?

- A) Unstructured PA in a natural environment may benefit self-esteem in children.
- B) Boys’ self-esteem benefits less than girls’ from PA in both structured and unstructured settings.
- C) Studies of orienteering do not provide enough information to study effects on self-esteem.
- D) Structured PA on playgrounds provides greater benefits to self-esteem than other activities do.

10

It can reasonably be inferred from the chart that

- A) Girls enjoyed playing more than boys.
- B) Playgrounds and fields are the only two viable options for physical activity in children.
- C) Boys are equally happy playing anywhere.
- D) PA on playgrounds increased average self-esteem more than PA in fields.

11

The difference between the average increase in girls' self-esteem and boys' self-esteem post-play is closest to

- A) 0.3
- B) 0.5
- C) 0.68
- D) 0.83

This passage is adapted from Danielle M. Roemer, "Riddles," in Children's Folklore: A Source Book. © 1999 by Brian Sutton-Smith et al.

Line Questions of when, where, how, and with whom children's  
riddles [are used] have been addressed in the folkloristic and  
anthropological literature, but they have rarely been answered  
in depth. Prior to the 1960s or so, collecting standards allowed  
5 considerable latitude in the recording of contextual and  
interactional data. Many researchers simply ignored the  
information. Others sketched out basic parameters, but too  
often their observations tended toward the obvious and the  
dominant. For example, researchers have tended to regard  
10 community members as a homogeneous group, thereby  
assuming that whatever was true for adult riddling held equally  
well for children's. Or, they viewed children themselves as  
undiversified, thereby bypassing differences in riddling due to  
youngsters' ages, or, in urban areas, their ethnic heritage.  
15 Especially problematic has been information about settings and  
interactional events that encourage or inhibit riddling.

Despite this unevenness in the literature, enough  
information is retrievable to at least hint at some cross-cultural  
trends. As the first of these, we can identify two broadly  
20 different tracks that communities take with regard to the  
appropriateness of distinct groups' engaging in riddling. First,  
there are groups that treat riddling as an activity open to both  
adults and children. Among the Anang of Nigeria, for instance,  
both adults and children may pose and answer riddles.  
25 Secondly, and in contrast to groups like the Anang,  
communities may limit active involvement according to the age  
(or perhaps, the social status) of the potential participants. In  
some cases, riddling is seen as an adult prerogative. Though  
riddles may be posed occasionally to children for specific  
30 purposes, such as testing the youngsters' intelligence, they are  
not otherwise encouraged to participate. As an alternative to  
across-the-board restrictions based on age, other communities  
require children to simply remain silent when riddling occurs  
in adult social events.

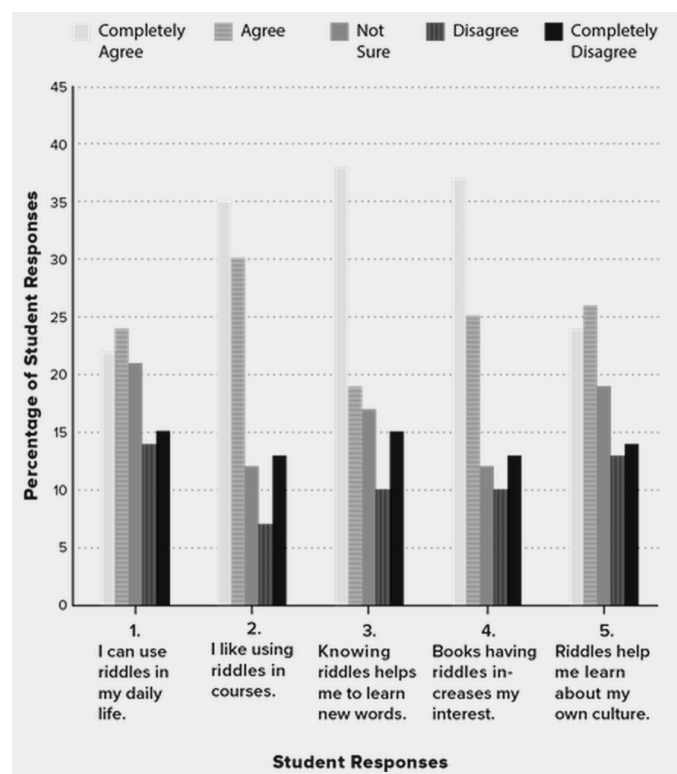
35 Within the literature, the most frequently reported  
occasions of adult-child riddling are those involving  
pedagogy\* and leisure-time activity, respectively. In pedagogic  
riddling, the adult takes on the role of teacher, the child the role  
of student. The interactions can occur in the home as well as in  
40 the school. To take the home environment first: Among the  
Chamula of Central America, mothers may use riddles in  
teaching their children to talk. In the Ozark mountains of the  
United States in the 1930s, some parents regarded "workin' out  
riddles" as an intellectual discipline for children. They posed  
45 riddles to their children in the hope of training the children's  
minds. Similar motives appear to have been behind adult-child  
riddling in other areas of the United States and in Europe. By  
far, the most frequent reports of pedagogic riddling in the  
home come from Africa. There, riddling is used to amuse  
50 children while testing their wit and competence in culture-  
specific values. With respect to pedagogic riddling in the school  
environment, several curriculum reports have suggested that  
riddling in the classroom can aid youngsters' development of  
perceptual and descriptive skills. Although to my knowledge  
55 we have no ethnographic reports of pedagogic riddling within  
the mainstream classroom, there exists at least one report  
treating riddle use in formal, non-English language instruction.

Diane Roskies studied classroom activities in Kheyder, a  
Jewish primary school. There, a variety of verbal art forms  
60 were applied in the teaching of the [Hebrew] alphabet. As one  
example of the pedagogic play, the children were encouraged  
to tell riddles dealing with the shapes of the letters.

In contrast to pedagogic riddling, leisure-time riddling is  
pursued as an end in itself. Entertainment is the primary goal.  
65 Generally speaking, leisure-time riddling between children  
and adults develops in the vicinity of the home, when practical  
obligations are few. Although parents and siblings appear to  
be children's most frequent coparticipants, youngsters  
confronted by more distant relatives and other visitors may  
70 find that they can use riddling to communicate across the  
"small-talk barrier." Of course, it is always possible that this  
arrangement can backfire. Proud of their "funny, clever"  
children, parents have been known to encourage the  
youngsters to "perform" riddles for the parents' friends.  
75 Beginning of reading passage footnotes.

\*Pedagogy is the method and practice of teaching.

Student Responses to Statements about the Use of Riddles in the Classroom (in Percentages)



Source: Adapted from Tuncay Dilci et al., "The Views of Primary School Students on Use of Riddles in the Process of Education and Training." © 2012 by IDOSI Publications.

1

The passage makes the most extensive use of which type of evidence?

- A) Expert testimony
- B) Case studies
- C) Historical trends
- D) Statistical analysis

2

Which choice best reflects the author's view of much of the existing research on riddling?

- A) It is misleading because it puts too much emphasis on variations in riddles in urban and rural settings.
- B) It focuses on riddles adults present to children and fails to address riddling between children.
- C) It undermines commonly accepted beliefs about riddling behavior in an attempt to present new conclusions.
- D) It is incomplete because it overlooks age as a significant factor in riddling behavior.

3

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

- A) lines 7–9 (“Others . . . dominant”)
- B) lines 9–12 (“For . . . children's”)
- C) lines 15–16 (“Especially . . . riddling”)
- D) lines 21–23 (“First . . . children”)

4

The phrase “cross-cultural” (line 18) primarily serves to

- A) describe the specific ways in which riddling works in every culture.
- B) demonstrate the culture-specific nature of riddling around the world.
- C) emphasize the uneven nature of literature that claims to be universal.
- D) characterize the universality of certain traits of riddling.

5

As used in line 29, “posed” most nearly means

- A) displayed.
- B) positioned.
- C) asked.
- D) suggested.

6

The description of Ozark parents mainly serves to

- A) illustrate one way riddling is used to teach children.
- B) provide a counterpoint to the previous example of the Chamula of South America.
- C) introduce the concept of leisure-time riddling in various populations.
- D) give an example of a commonly misunderstood use of riddling.

7

What does the author imply about parents who use leisure-time riddling at home?

- A) They occasionally overestimate others' interest in their children.
- B) They use riddling to distract their children from more practical tasks.
- C) They encourage their children to perform riddles when conversation lags.
- D) They try to have children share riddles with their siblings.

8

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

- A) lines 65–67 (“Generally . . . few”)
- B) lines 67–71 (“Although . . . barrier”)
- C) lines 71–72 (“Of course . . . backfire”)
- D) lines 72–74 (“Proud . . . friends”)

9

Student responses to which statement in the graph best support the author's claim that riddling may lead to positive educational outcomes?

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

11

The percentage of students noting complete agreement with the statement "Riddles help me learn about my own culture" is closest to

- A) 30%.
- B) 25%.
- C) 20%.
- D) 15%.

10

It can reasonably be inferred from the graph that the majority of children surveyed

- A) enjoy using riddles in the classroom to some extent.
- B) believe in the importance of riddles to their education in the classroom.
- C) partially dislike the use of riddles in the classroom.
- D) see no educational benefit in riddling.

# History

The following is a speech given by Benjamin Franklin to the Constitutional Convention on September 17, 1787. The Convention was deciding whether to ratify the final version of the U.S. Constitution.

Dear Mr. President,

I confess that there are several parts of this constitution which I do not at present approve, but I am not sure I shall never approve them: For having lived long, I have experienced many instances of being obliged by better information or fuller consideration, to change opinions even on important subjects, which I once thought right, but found to be otherwise. It is therefore that the older I grow, the more apt I am to doubt my own judgment, and to pay more respect to the judgment of others. Most men indeed as well as most sects in Religion, think themselves in possession of all truth, and that wherever others differ from them it is so far error. Steele, a Protestant in a Dedication tells the Pope, that the only difference between our Churches in their opinions of the certainty of their doctrines is, the Church of Rome is infallible and the Church of England is never in the wrong. But though many private persons think almost as highly of their own infallibility as of that of their sect, few express it so naturally as a certain french lady, who in a dispute with her sister, said "I don't know how it happens, Sister but I meet with no body but myself, that's always in the right". . .

In these sentiments, Sir, I agree to this Constitution with all its faults, if they are such; because I think a general Government necessary for us, and there is no form of Government but what may be a blessing to the people if well administered, and believe farther that this is likely to be well administered for a course of years, and can only end in Despotism, as other forms have done before it, when the people shall become so corrupted as to need despotic Government, being incapable of any other. I doubt too whether any other Convention we can obtain may be able to make a better Constitution. For when you assemble a number of men to have the advantage of their joint wisdom, you inevitably assemble with those men, all their prejudices, their passions, their errors of opinion, their local interests, and their selfish views.

From such an Assembly can a perfect production be expected? It therefore astonishes me, Sir, to find this system approaching so near to perfection as it does; and I think it

will astonish our enemies, who are waiting with confidence to hear that our councils are confounded like those of the Builders of Babel\*; and that our States are on the point of separation, only to meet hereafter for the purpose of cutting one another's throats. Thus I consent, Sir, to this Constitution because I expect no better, and because I am not sure, that it is not the best. The opinions I have had of its errors, I sacrifice to the public good—I have never whispered a syllable of them abroad—Within these walls they were born, and here they shall die—If every one of us in returning to our Constituents were to report the objections he has had to it, and endeavor to gain partizans in support of them, we might prevent its being generally received, and thereby lose all the salutary effects & great advantages resulting naturally in our favor among foreign Nations as well as among ourselves, from our real or apparent unanimity. Much of the strength & efficiency of any Government in procuring and securing happiness to the people, depends on opinion, on the general opinion of the goodness of the Government, as well as well as of the wisdom and integrity of its Governors. I hope therefore that for our own sakes as a part of the people, and for the sake of posterity, we shall act heartily and unanimously in recommending this Constitution (if approved by Congress & confirmed by the Conventions) wherever our influence may extend, and turn our future thoughts & endeavors to the means of having it well administered.

On the whole, Sir, I cannot help expressing a wish that every member of the Convention who may still have objections to it, would with me, on this occasion doubt a little of his own infallibility--and to make manifest our unanimity, put his name to this instrument.

\*In the Christian Bible, the people who built the Tower of Babel spoke multiple languages and could not understand each other well enough to complete the tower's construction.

# History

1

The author's central claim in the passage is that

- A) the Constitution will have to suffice until it is proven to be inadequate.
- B) the objections to the Constitution are trivial and should be disregarded by the Assembly.
- C) the objections to the Constitution can be dismissed unless they are unanimous.
- D) the Constitution is adequate and should be passed without objection.

2

In the passage, Franklin characterizes himself as someone who is

- A) sarcastic.
- B) experienced.
- C) cynical.
- D) indecisive.

3

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

- A) lines 8–10 (“It is . . . of others”)
- B) lines 23–26 (“I think . . . well administered”)
- C) lines 44–46 (“Thus . . . the best”)
- D) lines 59–62 (“I hope . . . Constitution”)

4

In line 35, the word “local” most nearly means

- A) geographical.
- B) provincial.
- C) nearby.
- D) domestic.

5

According to the passage, the main objection to immediate passage of the Constitution is that it is

- A) unpopular.
- B) despotic.
- C) imperfect.
- D) partisan.

6

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

- A) an acknowledgment of criticism to a dismissal of its validity.
- B) an admission of a problem to the proposal of a solution.
- C) an overview of inconsistencies to an explanation of their complexity.
- D) an argument for action to a summary of guiding principles.

7

Franklin attributes the Constitution's flaws to the fact that

- A) the document was written very quickly.
- B) the people who wrote it all had their own opinions.
- C) the citizens of the nation were not consulted.
- D) the writers were trying to appear unanimous when they were not.

8

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

- A) lines 2–4 (“I confess . . . them”)
- B) lines 32–36 (“For when . . . views”)
- C) lines 38–39 (“It therefore . . . does”)
- D) lines 46–49 (“The opinions . . . die”)

9

The main comparison Franklin draws between the

- A) Assembly and the Churches is in terms of their members' stubborn adherence to doctrine.
- B) dedication to promoting the truth.
- C) unwillingness to accept failure.
- D) blindness to their weaknesses.

10

The main purpose of Franklin's comment about the French lady (line 19) is most likely to

- A) ridicule the arrogance of the lady.
- B) allude to the division of public opinion.
- C) point out a universal truth in a humorous way.
- D) convey the futility of further dispute.

## History

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11

As used in line 57, “general” most nearly means

- A) overall.
- B) typical.
- C) customary.
- D) ordinary.

# History

Passage 1 is excerpted from a published letter written by an author known only as the Federal Farmer. Passage 2 is excerpted from a published letter by Agrippa, the pseudonym of James Winthrop. Winthrop was part of the anti-federalist movement. Both passages were written in 1787.

## Passage 1

Our object has been all along, to reform our federal system, and to strengthen our governments, but a new object now presents. The plan of government now proposed is  
 Line evidently calculated totally to change, in time, our condition  
 5 as a people. Instead of being thirteen republics, under a federal head, it is clearly designed to make us one consolidated government. Whether such a change can ever be effected in any manner; whether it can be effected without convulsions and civil wars; whether such a change will not  
 10 totally destroy the liberties of this country--time only can determine.

The confederation was formed when great confidence was placed in the voluntary exertions of individuals, and of the respective states; and the framers of it, to guard against  
 15 usurpation, so limited and checked the powers. We find, therefore, members of congress urging alterations in the federal system almost as soon as it was adopted. The first interesting question is how far the states can be consolidated into one entire government on free principles. The happiness  
 20 of the people at large must be the great object with every honest statesman, and he will direct every movement to this point. If we are so situated as a people, as not to be able to enjoy equal happiness and advantages under one government, the consolidation of the states cannot be  
 25 admitted.

Touching the federal plan, I do not think much can be said in its favor: The sovereignty of the nation, without coercive and efficient powers to collect the strength of it, cannot always be depended on to answer the purposes of  
 30 government; and in a congress of representatives of sovereign states, there must necessarily be an unreasonable mixture of powers in the same hands.

Independent of the opinions of many great authors, that a free elective government cannot be extended over large  
 35 territories, a few reflections must evince, that one government and general legislation alone, never can extend

equal benefits to all parts of the United States: Different laws, customs, and opinions exist in the different states, which by a uniform system of laws would be unreasonably  
 40 invaded. The United States contain about a million of square miles, and in half a century will, probably, contain ten millions of people.

## Passage 2

Let us now consider how far [the new system] is consistent with the happiness of the people and their  
 45 freedom. It is the opinion of the ablest writers on the subject, that no extensive empire can be governed upon republican principles, and that such a government will degenerate to a despotism, unless it be made up of a confederacy of smaller states, each having the full powers of internal regulation.  
 50 This is precisely the principle which has hitherto preserved our freedom. No instance can be found of any free government of considerable extent which has been supported upon any other plan. Large and consolidated empires may indeed dazzle the eyes of a distant spectator with their  
 55 splendour, but if examined more nearly are always found to be full of misery. The reason is obvious. In large states the same principles of legislation will not apply to all the parts. The laws not being made by the people, who felt the inconveniences, did not suit their circumstances. It is under  
 60 such tyranny that the Spanish provinces languish, and such would be our misfortune and degradation, if we should submit to have the concerns of the whole empire managed by one legislature. To promote the happiness of the people it is necessary that there should be local laws; and it is necessary  
 65 that those laws should be made by the representatives of those who are immediately subject to the want of them.

It is impossible for one code of laws to suit Georgia and Massachusetts. They must, therefore, legislate for themselves. The laws of Congress are in all cases to be the  
 70 supreme law of the land, and paramount to the constitutions of the individual states. This new system is, therefore, a consolidation of all the states into one large mass, however diverse the parts may be of which it is to be composed. The idea of an uncompounded republick, on an average, one  
 75 thousand miles in length, and eight hundred in breadth, and containing six millions of inhabitants all reduced to the same

# History

standard of morals, or habits, and of laws, is in itself an absurdity, and contrary to the whole experience of mankind. All that part, therefore, of the new system, which relates to the  
80 internal government of the states, ought at once to be rejected.

4 In explaining their ideas on federal government, both authors make use of which kind of evidence?  
A) Historical records  
B) Expert testimony  
C) Hypothetical scenarios  
D) Personal anecdotes

1 The main purpose of Passage 1 is to  
A) provide information about plans to reform the federal system.  
B) highlight inconsistent government principles across multiple states.  
C) introduce plans for a new kind of government that differs greatly from the current one.  
D) question a proposal to consolidate power in a single federal system.

2 Which statement about the federal government most accurately reflects the point of view of the author of Passage 1?  
A) The current form of government has been in place for too long and increased consolidation is long overdue.  
B) The proposed changes would bring about more negative consequences than maintaining the current form of government would.  
C) A well-functioning confederation is impossible because independent states will never agree on policies.  
D) The uniform system of laws proposed by a federal government will help unite the country as one nation.

3 Which idea is presented in Passage 2 but NOT in Passage 1?  
A) The proposed form of federal government will inevitably result in tyranny.  
B) The happiness and liberty of the people should be the priority of any form of government.  
C) The country is too large and has too many people for a federal government to rule effectively.  
D) It is better for states to govern themselves due to their differences in customs.

5 Both passages argue that individual states  
A) would not benefit from following the same set of laws.  
B) are becoming too unwieldy due to lack of one unifying government.  
C) run the risk of engaging in multiple civil wars over time.  
D) duplicate functions and should be eventually consolidated.

6 It can reasonably be inferred from Passage 1 that the author is  
A) skeptical that consolidating the government can occur peacefully.  
B) curious about reforming the federal system of government.  
C) concerned that increasing the independence of states will weaken local governments.  
D) doubtful that the majority of people will vote for new government legislation.

7 Which choice provides the best evidence for the answer to the previous question?  
A) lines 1–3 (“Our...presents”)  
B) lines 3–5 (“The...people”)  
C) lines 5–7 (“Instead...government”)  
D) lines 7–11 (“Whether...determine”)

8 In line 40, “invaded” most nearly means  
A) infringed.  
B) usurped.  
C) trespassed.  
D) permeated.

# History

9

By referring to the potential government as "a despotism" line 48, the author of Passage 2 implies that the proposal is

- A) extreme and dangerous.
- B) unwise but possible.
- C) troublesome and uncertain.
- D) hazardous but inevitable.

10

How would the author of Passage 2 most likely respond to the author's ideas about consolidation of power in lines 33–42 of Passage 1?

- A) With disapproval, because they contradict his argument.
- B) With approval, because they help support his argument.
- C) With caution, because while the authors agree on some points, they do not agree on all.
- D) With support, because they bring up a new idea about the debate.

11

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

- A) lines 53–56 ("Large...misery")
- B) lines 56–57 ("In...parts")
- C) lines 63–66 ("To...them")
- D) lines 69–71 ("The...states")

# History

This passage is adapted from a letter written by Thomas Jefferson to James Madison. It was originally written in 1785, when Jefferson was residing in France.

Seven o'clock, and retired to my fireside, I have determined to enter into conversation with you; this [Fontainebleau] is a village of about 5,000 inhabitants when the court is not here and 20,000 when they are, occupying a valley thro' which runs a brook, and on each side of it a ridge of small mountains most of which are naked rock. The king comes here in the fall always, to hunt. His court attend him, as do also the foreign diplomatic corps. But as this is not indispensably required, and my finances do not admit the expence of a continued residence here, I propose to come occasionally to attend the king's levees, returning again to Paris, distant 40 miles.

This being the first trip, I set out yesterday morning to take a view of the place. For this purpose I shaped my course towards the highest of the mountains in sight, to the top of which was about a league. As soon as I had got clear of the town I fell in with a poor woman walking at the same rate with myself and going the same course. Wishing to know the condition of the labouring poor I entered into conversation with her, which I began by enquiries for the path which would lead me into the mountain: and thence proceeded to enquiries into her vocation, condition and circumstance. She told me she was a day labourer, at 8. sous or 4 d. sterling the day; that she had two children to maintain, and to pay a rent of 30 livres for her house (which would consume the hire of 75 days), that often she could get no employment, and of course was without bread. As we had walked together near a mile and she had so far served me as a guide, I gave her, on parting 24 sous. She burst into tears of a gratitude which I could perceive was unfeigned, because she was unable to utter a word. She had probably never before received so great an aid.

This little attendrissement<sup>1</sup>, with the solitude of my walk led me into a train of reflections on that unequal division of property which occasions the numberless instances of wretchedness which I had observed in this country and is to be observed all over Europe. The property of this country is absolutely concentered in a very few hands, having revenues of from half a million of guineas a year downwards. These employ the flower of the country as servants, some of them

having as many as 200 domestics, not labouring. They employ also a great number of manufacturers, and tradesmen, and lastly the class of labouring husbandmen<sup>2</sup>.

But after all these comes the most numerous of all the classes, that is, the poor who cannot find work. I asked myself what could be the reason that so many should be permitted to beg who are willing to work, in a country where there is a very considerable proportion of uncultivated lands? These lands are kept idle mostly for the sake of game. It should seem then that it must be because of the enormous wealth of the proprietors which places them above attention to the increase of their revenues by permitting these lands to be laboured.

I am conscious that an equal division of property is impracticable. But the consequences of this enormous inequality producing so much misery to the bulk of mankind, legislators cannot invent too many devices for subdividing property, only taking care to let their subdivisions go hand in hand with the natural affections of the human mind. The descent of property of every kind therefore to all the children, or to all the brothers and sisters, or other relations in equal degree is a politic measure, and a practicable one. Another means of silently lessening the inequality of property is to exempt all from taxation below a certain point, and to tax the higher portions of property in geometrical progression as they rise. Whenever there is in any country, uncultivated lands and unemployed poor, it is clear that the laws of property have been so far extended as to violate natural right. The earth is given as a common stock for man to labour and live on. If, for the encouragement of industry we allow it to be appropriated, we must take care that other employment be furnished to those excluded from the appropriation. . .

<sup>1</sup> emotion

<sup>2</sup> farmers

# History

1

Jefferson's central claim in the passage is that

- A) the current system of inheritance and ownership is unlikely ever to change.
- B) wealth should be redistributed in a way that benefits the majority of society.
- C) the unemployed should use their energies to work the land, rather than ask for money.
- D) everybody has the natural right to as much property as he or she thinks necessary.

2

Jefferson uses the example of the woman he meets on the road in order to

- A) provide a moving anecdote in order to distract his reader from larger issues.
- B) illustrate his surroundings with an atypical example of the native people.
- C) support the claim that the economic situation is worse than Madison thinks.
- D) transition from his specific experience to a more general argument.

3

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

- A) a description of the locale to a broader discussion of principles.
- B) a humorous anecdote to a position on a popular U.S. debate.
- C) an analysis of the king's situation to an analysis of an unemployed person's.
- D) Jefferson's experiences in France to Madison's experiences in the U.S.

4

The main purpose of the passage's information about Fontainebleau is to

- A) provide a picturesque counterpoint to the terrible poverty that Jefferson witnesses.
- B) describe a foreign land to someone who has never visited France.
- C) contextualize the anecdote and argument that follow.
- D) interest the reader in the narrative before changing topics.

5

Jefferson implies that the initial purpose of his walk was to

- A) better understand the physical geography around him.
- B) get out of the town in order to think more clearly.
- C) understand the condition of non-American laborers.
- D) avoid running into the king and his courtiers.

6

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

- A) lines 8–12 (“But as . . . miles”)
- B) lines 13–14 (“This . . . place”)
- C) lines 16–18 (“As soon . . . course”)
- D) lines 18–20 (“Wishing . . . her”)

7

What main effect does the phrase “flower of the country,” line 40, have on the tone of the passage?

- A) It lightens the tone by providing a metaphor of beauty in an otherwise bleak narrative.
- B) It provides an impassioned tone to describe the discrepancy between the relative privilege of the few and the hardship of the many.
- C) It creates a tone of praise by comparing the workers of France to those in the U.S.
- D) It creates an optimistic tone by showing that the people of France are variously employed.

8

As used in line 49, “game” most nearly means

- A) tricks to be played.
- B) play to be undertaken.
- C) sports to be practiced.
- D) animals to be hunted.

# History

9

Which choice best describes Jefferson's attitude towards socio-economic conditions in France?

- A) He approves of the king's policies on most, but not all, issues.
- B) He sees France as an isolated case, with unique conditions not applicable to other countries.
- C) He is affronted at the few opportunities given to the poor.
- D) He is pleased that the United States does not experience the same conditions as France.

10

Jefferson's statement that he is conscious that "an equal division of property is impracticable" (lines 54–55) implies that he

- A) has decided that there is no point in pursuing his goals, because they would ultimately prove impossible to carry out.
- B) knows that his ideals are not entirely realistic, yet still believes that some improvement is possible.
- C) does not care about what is realistically possible, but is only concerned with the way that things should be.
- D) believes that even though property cannot be divided equally, it should still be divided according to a man's abilities.

11

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

- A) lines 49–53 ("It should . . . laboured")
- B) lines 55–56 ("But the consequences . . . mankind")
- C) lines 57–59 ("legislators . . . mind")
- D) lines 59–62 ("The descent . . . one")

# History

This passage is excerpted from Theodore Roosevelt's speech to the workers on the Panama Canal, originally written in 1906. The Panama Canal, which provides a passageway for ships traveling between the Atlantic and Pacific Oceans, is one of the largest and most difficult engineering projects ever undertaken. Roosevelt gave this speech during his visit to the Canal zone to check on the progress of the work.

It was without precedent for a president to leave the United States, but this work is without precedent. You are doing the biggest thing of the kind that has ever been done, and I wanted to see how you are doing it. I am profoundly thankful that I shall be able to take back to the United States the message that the nation's picked sons are carrying themselves so well here that I can absolutely guarantee the success of the mighty work which they are doing. It is not an easy task. Mighty few things that are worth doing are easy. . .

I want to say this word to you men,--right through,--to all of you who are engaged in the work of digging this canal, whether you are here as superintendent, foreman, chief clerk, machinist, conductor, engineer, steam-shovel man (and he is the American who is setting the mark for the rest of you to live up to, by the way), whoever you are, if you are doing your duty, you are putting your country under an obligation to you just as a soldier who does his work well in a great war puts the country under an obligation to him. As I have seen you at work, seen what you have done and are doing, noted the spirit in which you are approaching the task yet to be done, I have felt just exactly as I should feel if I saw the picked men of my country engaged in some great war. I am weighing my words when I say that you here, who do your work well in bringing to completion this great enterprise, will stand exactly as the soldiers of a few, and only a few, of the most famous armies of all the nations stand in history. This is one of the great works of the world; it is a greater work than you, yourselves, at the moment realize. Some of you, a good many of you, are sons of men who fought in the Civil War. When your fathers were in the fighting, they thought a good deal of the fact that the blanket was too heavy by noon and not quite heavy enough by night; that the pork was not as good as it might be; and the hardtack was sometimes insufficient in amount; and they were not always satisfied with the way in which the regiments were led.

Those were the things they talked about a good deal of

the time. But when the war was done--when they came home, when they looked at what had been accomplished--all those things sank into insignificance, and the great fact remained that they had played a part like men among men; that they had borne themselves so that when people asked what they had done of worth in those great years, all they had to say was that they had served decently and faithfully in the great armies. So you men here, in the future, each man of you, will have the right to feel, if he has done his duty and a little more than his duty right up to the handle in the work here on the Isthmus, that he has made his country his debtor; that he has done more than his full share in adding renown to the nation under whose flag the canal is being built.

. . .

In closing, all I have to say is this: You are doing the work the like of which has not before been seen in the ages, a work that shall last through the ages to come, and I pledge to you as President of the United States, every ounce of support and help and assistance, that it is in my power to give you, so that we together, you backed by the people of the United States, may speedily bring this greatest of works to a triumphant conclusion.

# History

1

The main purpose of the speech is to

- A) stress the importance of the Panama Canal.
- B) report on the progress of the Panama Canal.
- C) inspire the Panama Canal workers.
- D) proclaim the Panama Canal project a success.

2

What main effect does the phrase “nation’s picked sons,” (line 6), have on the tone of the passage?

- A) It creates an historical tone that recalls past traditions.
- B) It creates an uplifting tone that boosts confidence in the project.
- C) It creates a presidential tone that reinforces Roosevelt’s authority.
- D) It creates a patriotic tone that stimulates pride.

3

The main purpose of Roosevelt’s comment about the steam shovel man (lines 12–13) is most likely to

- A) stress the significance of every contribution to the project.
- B) stress the importance of technology to the project’s success.
- C) praise the quality of the work done by the manual laborers.
- D) encourage the manual laborers to work to the best of their ability.

4

As used in line 24, “enterprise” most nearly means

- A) establishment.
- B) business.
- C) invention.
- D) undertaking.

5

The main comparison Roosevelt draws between the Civil War and the Panama Canal project is in terms of their

- A) historical significance.
- B) fundamental purpose.
- C) organizational structure.
- D) political motivation.

6

Which choice best explains Roosevelt’s praise for the workers?

- A) He appreciates them for their determination to prove the United States’ superiority.
- B) He admires them for their success at rekindling national pride.
- C) He respects them for their selfless service to the nation.
- D) He values them for their contribution to the world’s economy.

7

It can be inferred from the third paragraph (lines 36–49) that Roosevelt believes that the United States

- A) should come to the aid the workers on the Panama Canal.
- B) will reap the benefits of the work done on the Panama Canal.
- C) will fail to give the workers on the Panama Canal the credit they deserve.
- D) should support the Panama Canal out of respect for its history.

8

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

- A) lines 36–37 (“Those...time”)
- B) lines 37–39 (“when they . . . insignificance”)
- C) lines 42–44 (“all they...armies”)
- D) lines 47–49 (“he has. . .built”)

9

Based on the passage, the project’s potential success would be considered all the more a triumph, because

- A) many of the most capable men were at war.
- B) much of the world was invested in the outcome.
- C) the workers initially felt unattached to the work.
- D) the president was slow to give his full support.

# History

10

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

- A) lines 26–28 (“This is . . . realize”)
- B) lines 39–40 (The great . . . among men”)
- C) lines 51–52 (“You...ages”)
- D) lines 53–55 (“I pledge . . . you”)

11

Roosevelt uses the information in the last paragraph mainly to support his assertion that

- A) the project has been promoted as a beacon of progress.
- B) more American workers have been secured for the project.
- C) the most difficult work on the project has been done.
- D) Americans have shown unprecedented support for the project.

# History

Passage 1 is an excerpt from *The Influence of Sea Power Upon History* by A.T. Mahan, originally published in 1890. Passage 2 is an excerpt from *Maritime Security, Sea Power, and Trade*, a speech given in 2014 by Tom Kelly, the Acting Assistant Secretary of the Bureau of Political-Military Affairs.

## Passage 1

The first and most obvious light in which the sea presents itself from the political and social point of view is that of a great highway; or better, perhaps, of a wide common, over  
Line which men may pass in all directions, but on which some  
5 well-worn paths show that controlling reasons have led them to choose certain lines of travel rather than others.

Under modern conditions, home trade is but a part of the business of a country bordering on the sea. Foreign necessities or luxuries must be brought to its ports, either in  
10 its own or in foreign ships, which will return, bearing in exchange the products of the country, whether they be the fruits of the earth or the works of men's hands; and it is the wish of every nation that this shipping business should be done by its own vessels. The ships that thus sail to and fro  
15 must have secure ports to which to return, and must, as far as possible, be followed by the protection of their country throughout the voyage.

....

In these three things—production, with the necessity of exchanging products, shipping, whereby the exchange is  
20 carried on, and colonies, which facilitate and enlarge the operations of shipping and tend to protect it by multiplying points of safety—is to be found the key to much of the history, as well as of the policy, of nations bordering upon the sea. The policy has varied both with the spirit of the age and with the  
25 character and clear-sightedness of the rulers; but the history of the seaboard nations has been less determined by the shrewdness and foresight of governments than by conditions of position, extent, configuration, number and character of their people,—by what are called, in a word, natural  
30 conditions. It must however be admitted, and will be seen, that the wise or unwise action of individual men has at certain periods had a great modifying influence upon the growth of sea power in the broad sense, which includes not only the military strength afloat, that rules the sea or any part of it by  
35 force of arms, but also the peaceful commerce and shipping from which alone a military fleet naturally and healthfully springs, and on which it securely rests.

## Passage 2

One of the great strategic advantages of the United States is that, as "America, the Beautiful" reminds us, our nation  
40 stretches from "sea to shining sea." The oceans have been part of our identity – and our protection – since the founding of the country. They have been the path through which we became both a great commercial and a great military force. I may be a diplomat, but I believe in naval  
45 power. It makes my job easier. I grew up on the shores of the Pacific Ocean. My professional background is in trade. So it's very natural for me to see the oceans and our maritime security as essential to our continued prosperity.

Ninety percent of world trade is conducted on the oceans.  
50 Our food, our fuel, our imports and exports all travel on these global economic highways. Maritime trade is our nation's life blood. Keeping the oceans free for commerce – in two words, maritime security – is key to our national security.

Today, this phrase encompasses a complex set of issues, including both public and private activities, sometimes with diametrically opposed interests. . . . Mother Nature  
55 reminded us that she still controls some aspects of maritime security. . . . Climate change is affecting the Arctic. As the ice cap shrinks, old shipping lanes are expanding and, in  
60 some cases, new ones are opening. Opening these Arctic lanes to commerce and keeping them free will be important. As the lanes open, we'll see more demand for access to the Arctic's natural resources, which in turn may raise the  
65 stakes on territorial disputes.

We should remember that outside the domestic waters of the United States, securing our own maritime security depends on our foreign policy. Our security assistance  
70 programs. . . can be a critical tool to support states trying to build their security capacity, which feeds into larger foreign policy objectives beyond achieving peace and security – such as promoting economic growth, democracy, and human rights.

# History

1

The author of Passage 1 implies that a coastal nation's primary goal in building a navy is to

- A) attack other nations.
- B) protect trading ships.
- C) defend its coastlines.
- D) threaten its trading partners.

6

The author of Passage 2 implies that the United States might not have become a superpower were it not for its

- A) economic strength.
- B) geographical position.
- C) superior military.
- D) natural resources.

2

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

- A) lines 1–6 (“The...others”)
- B) lines 8–14 (“Foreign necessities...vessels”)
- C) lines 18–23 (“In...sea”)
- D) lines 31–37 (“The wise...rests”)

7

Which choice best supports the answer to the previous question?

- A) lines 42–44 (“They...force”)
- B) lines 51–52 (“Maritime trade...life blood”)
- C) lines 55–57 (“Today...interests”)
- D) lines 68–70 (“Our security...capacity”)

3

In line 3, the word “common” most nearly means

- A) public land.
- B) political group.
- C) legal right.
- D) shared condition.

8

Unlike Passage 1, Passage 2 focuses on

- A) the benefits of trading with other nations via the oceans.
- B) the relationship of economic and military power.
- C) the shifting of maritime policies to adapt to changing circumstances.
- D) the importance of the oceans for a specific nation.

4

In line 10, the word “bearing” most nearly means

- A) carrying.
- B) allowing.
- C) supporting.
- D) yielding.

9

In Passage 2, the discussion of climate change primarily serves to

- A) convey the gravity of the threat to the oceans.
- B) stress the power of Mother Nature.
- C) exemplify the many factors affecting maritime security.
- D) suggest a plausible government initiative.

5

The author’s central claim in Passage 2 is that

- A) the continued prosperity of the U.S. depends on keeping the oceans secure.
- B) U.S. foreign policy must change to focus on maintaining control of the seas.
- C) the U.S military is crucial to defending domestic waters.
- D) the security of the world’s oceans is increasingly at risk by enemies of the U.S.

# History

10

The author of Passage 2 would most probably view Passage 1's claim about "natural conditions" (line 29-30) with

- A) approval, because he sees the nation's oceans as a strategic advantage.
- B) skepticism, because he believes in both naval power and diplomacy.
- C) hostility, because his professional background is in trade.
- D) anxiety, because he is worried about the effects of climate change.

11

Based on the passages, both authors connect the idea of sea power with

- A) the ineffectiveness of the Navy in protecting trade.
- B) a leader's desire to prevent territorial disputes.
- C) a country's political and economic advancement.
- D) the rights guaranteed to all people by natural law.

# History

Passage 1 is excerpted from Senator William E. Borah, "Speech to the Senate," delivered in 1919. Passage 2 is excerpted from an editorial in the Magyar Tribune, "Shall There Be a League of Nations?" Originally published in 1920. In the aftermath of World War I (1914-1918), United States President Woodrow Wilson sought to create an international governing body, called the League of Nations, that would come together to solve disputes between nations openly and peacefully.

## Passage 1

Mr. President, after Mr. Lincoln had been elected President, before he assumed the duties of the office and at the time when all indications were to the effect that we would soon be in the midst of civil strife, a friend from the city of Washington wrote him for instructions. Mr. Lincoln wrote back in a single line, "Entertain no compromise; have none of it." That states the position I occupy at this time and which I have in my humble way occupied from the first contention in regard to this proposal of entering the League of Nations.

Have we not been told day by day for the last nine months that the Senate of the United States, a coordinate part of the treaty-making power, should accept this league as it was written because the wise men sitting in Versailles\* had so written it, and has not every possible influence and every source of power in public opinion been organized and directed against the Senate to compel it to do that thing?

What is the result of all this? We are in the midst of all the affairs of Europe. We have joined in alliance with all European concerns. We have joined in alliance with all the European nations which have thus far joined the league, and all nations which may be admitted to the league. We are sitting there dabbling in their affairs and intermeddling in their concerns. In other words, Mr. President—and this comes to the question which is fundamental with me—we have forfeited and surrendered, once and for all, the great policy of "no entangling alliances" upon which the strength of this Republic has been founded for 150 years.

\* a city in France where the primary treaty ending World War I was signed

## Passage 2

In Europe, there is no controversy about the League of Nations. Each nation can see the necessity of such an

organization, in fact, they are looking forward to its activities with high hopes, as an organization being capable of preventing a recurrence of another bloody war such as we have just gone through, and one that has upset Europe and the entire world.

The nations that lost the war, Germany, Hungary, Bulgaria, and Turkey, are the only nations of Europe who cannot be members at the present time, due to the fact that the other nations do not want them to have anything to do with the conferences of the League, and this revolutionary move. This is considered as a punishment to the above named nations.

In a very short time these nations will also be admitted as members of the League. Russia is not a member yet, either, because Russia seems to be preparing for war against the whole world, though it is only a matter of time before Russia will join the League, even though its political views will be entirely different from the rest of the world.

It is here the controversy lies. Maybe, it is because there is nothing else to discuss, or on which the Republicans and Democrats can argue, maybe, it is because if America joins the League it will mean radical changes in America's foreign and domestic policies.

The United States has kept away from serious disagreements that have come up between European countries, but the World War thrust us into European politics. Due to industrial and economic conditions, the United States can no longer remain isolated from Europe.

Europe needs America, and America needs Europe. Products of the United States are constantly being exchanged for products manufactured in Europe, thereby cementing the tie between the two continents.

The entire world has made great advances in the field of contacting one another, since the invention of the steam locomotive, steam boat, and telephone. These inventions have brought the entire world closer together, and new ideas have developed.

So now the nations throughout the world are beginning to feel as though they should all unite into one solid organization, which will insure the world of everlasting peace, without interference from any one particular nation. This is the idea that gave birth to the League of Nations.

There are some who doubt whether the League will live up to these expectations of wiping war from the face of the earth. Of course, this is all guess work, but the idea seems like a good one and we believe it is worth trying.

# History

1

To what concerns do both Passage 1 and Passage 2 attribute opposition to the League of Nations?

- A) Apprehension about cooperating with rival European nations
- B) A desire to avoid significant changes in United States foreign policy
- C) Unwillingness to bear the financial burden of future conflict in Europe
- D) Distrust toward the foreign policy goals of other member nations

2

On which claim about foreign policy do the authors of both Passage 1 and Passage 2 agree?

- A) The United States must adapt its policies to changing global political conditions.
- B) Europe will be strengthened by United States participation in the League of Nations.
- C) The United States has mostly avoided foreign conflicts in the past.
- D) The League of Nations will not succeed in wiping war from the face of the earth.

3

Which piece of evidence, if added to Passage 2, would both strengthen the central claim of Passage 2 and challenge the central claim of Passage 1?

- A) A historical example demonstrating that a past foreign alliance benefited the United States
- B) A poll showing widespread support across Europe for the League of Nations
- C) A hypothetical example of how international trade agreements could strengthen the economies of Europe
- D) A quote from the President of the United States that demonstrates his support for the League of Nations

4

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

- A) support.
- B) critique.
- C) entertain.
- D) dislike.

5

In citing the example of President Lincoln, the author of Passage 1 implies that

- A) there is a moral and historical precedent for his own inflexibility regarding the League of Nations.
- B) President Lincoln was an early critic of the establishment of the League of Nations.
- C) the same "civil strife" faced by President Lincoln is being seen again in the aftermath of World War I.
- D) he believes President Lincoln would support the League of Nations.

6

Based on Passage 1, what relationship would the author most likely prefer the United States to have with the nations of Europe?

- A) A relationship fostering alliances with current members of the League of Nations, but not with future members
- B) A relationship that fosters interdependence through trade and diplomacy
- C) A relationship encouraging alliances with friendly nations in order to marginalize rival nations
- D) A relationship of neutrality toward both friendly and rival nations

# History

7

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

- A) lines 17-18 ("We are ... Europe")
- B) lines 18-19 ("We ... Europe concerns")
- C) lines 19-21 ("We ... the league")
- D) lines 23-27 (In ... years)

8

The main purpose of Passage 2 is to

- A) provide a balanced overview of global opinions on the League of Nations.
- B) state the author's opinion regarding the League of Nations.
- C) produce a historical record of the debate surrounding the League of Nations.
- D) inform European readers about the United States' perspective on the League of Nations.

9

The author of Passage 2 supports his central claim that the U.S. should join the League of Nations by

- A) citing historical data that illustrate the effect of past international wars on U.S. economics.
- B) offering his personal opinion on the League of Nations' approach to foreign and domestic policies.
- C) asserting that emerging connections between the U.S. and Europe will continue to be vital.
- D) explaining and responding to relevant counterarguments against U.S. participation in the League of Nations.

10

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

- A) lines 29-33 ("Each ... world")
- B) lines 41-45 ("Russia ... world")
- C) lines 46-50 ("Maybe ... policies")
- D) lines 53-55 ("Due ... Europe")

11

The author of Passage 2 includes the statement about doubting the capabilities of the League of Nations (lines 70–71) most likely in order to

- A) provide additional support for his or her argument regarding the League of Nations.
- B) imply that his or her argument regarding the League of Nations may have been overstated.
- C) criticize the pessimism of those who do not support his or her argument.
- D) lend credibility to his or her argument by acknowledging a counterargument.

# History

This passage is excerpted from Alexander Hamilton, "Report on Manufactures," originally published in 1791.

It is not uncommon to meet with an opinion that though the promoting of manufactures may be the interest of a part of the Union, it is contrary to that of another part. The Northern & Southern regions are sometimes represented as having adverse interests in this respect. Those are called Manufacturing, these Agricultural states; and a species of opposition is imagined to subsist between the Manufacturing and Agricultural interests.

This idea of an opposition between those two interests is the common error of the early periods of every country, but experience gradually dissipates it. Indeed they are perceived so often to succour and to befriend each other, that they come at length to be considered as one: a supposition which has been frequently abused and is not universally true. Particular encouragements of particular manufactures may be of a Nature to sacrifice the interests of landholders to those of manufacturers; But it is nevertheless a maxim well established by experience, and generally acknowledged, where there has been sufficient experience, that the aggregate prosperity of manufactures, and the aggregate prosperity of Agriculture are intimately connected. In the Course of the discussion which has had place, various weighty considerations have been adduced operating in support of that maxim. Perhaps the superior steadiness of the demand of a domestic market for the surplus produce of the soil, is alone a convincing argument of its truth.

Ideas of a contrariety of interests between the Northern and Southern regions of the Union, are in the Main as unfounded as they are mischievous. The diversity of Circumstances on which such contrariety is usually predicated, authorises a directly contrary conclusion. Mutual wants constitute one of the strongest links of political connection, and the extent of these bears a natural proportion to the diversity in the means of mutual supply.

Suggestions of an opposite complexion are ever to be deplored, as unfriendly to the steady pursuit of one great common cause, and to the perfect harmony of all the parts.

In proportion as the mind is accustomed to trace the intimate connexion of interest, which subsists between all the parts of a Society united under the same government--the infinite variety of channels which serve to Circulate the

prosperity of each to and through the rest--in that proportion will it be little apt to be disturbed by solitudes and Apprehensions which originate in local discriminations. It is a truth as important as it is agreeable, and one to which it is not easy to imagine exceptions, that every thing tending to establish substantial and permanent order, in the affairs of a Country, to increase the total mass of industry and opulence, is ultimately beneficial to every part of it. On the Credit of this great truth, an acquiescence may safely be accorded, from every quarter, to all institutions & arrangements, which promise a confirmation of public order, and an augmentation of National Resource.

But there are more particular considerations which serve to fortify the idea, that the encouragement of manufactures is the interest of all parts of the Union. If the Northern and middle states should be the principal scenes of such establishments, they would immediately benefit the more Southern, by creating a demand for productions; some of which they have in common with the other states, and others of which are either peculiar to them, or more abundant, or of better quality, than elsewhere. These productions, principally are Timber, flax, Hemp, Cotton, Wool, raw silk, Indigo, iron, lead, furs, hides, skins and coals. Of these articles Cotton & Indigo are peculiar to the Southern states; as are hitherto Lead & Coal. Flax and Hemp are or may be raised in greater abundance there, than in the More Northern states; and the Wool of Virginia is said to be of better quality than that of any other state: a Circumstance rendered the more probable by the reflection that Virginia embraces the same latitudes with the finest Wool Countries of Europe. The Climate of the South is also better adapted to the production of silk.

The extensive cultivation of Cotton can perhaps hardly be expected, but from the previous establishment of domestic Manufactories of the Article; and the surest encouragement and vent, for the others, would result from similar establishments in respect to them.

# History

1

The main purpose of the passage is to stress

- A) the complementary nature of agriculture and manufacturing.
- B) the importance of manufacturing to international trade.
- C) the suitability of the country's resources to both agriculture and manufacturing.
- D) the agricultural basis of economic imbalances within the States.

2

How does Hamilton organize his argument?

- A) He ridicules an ongoing debate and then clarifies the issue behind it.
- B) He describes a current problem and then gives historical examples to explain it.
- C) He introduces a prevailing belief and then presents arguments against it.
- D) He proposes a course of action and then explains the problem with enacting it.

3

What objection to his argument does Hamilton anticipate in the passage?

- A) The Northern states and Southern states have an inequality of resources.
- B) The agricultural and manufacturing industries embrace conflicting goals.
- C) The escalation of agricultural production is both appropriate and inevitable.
- D) The development of a national economy is neither desirable nor practical.

4

Which choice best supports the answer to the previous question?

- A) lines 1–3 (“It is not . . . other part.”)
- B) lines 14–17 (“Particular . . . manufacturers.”)
- C) lines 24–26 (“Perhaps . . . truth.”)
- D) lines 67–71 (“The wool . . . of Europe.”)

5

The main relationship Hamilton highlights between the Northern and the Southern states is in terms of their

- A) incompatible philosophies.
- B) disproportionate production.
- C) ongoing hostilities.
- D) complementary economies.

6

In the second paragraph, Hamilton implies that conflicts of interest among geographical regions

- A) reflect an opposition to independence.
- B) are unique to industrialized nations.
- C) interfere with the process of nation-building.
- D) lead to civil unrest.

7

Which choice best describes Hamilton's perspective on agriculture?

- A) Its uncontrolled growth tends to thwart economic progress.
- B) Its advancement is guaranteed by industrial development.
- C) Its expansion to the Northern states disadvantages manufacturers.
- D) Its significance is overestimated by Southern landowners.

8

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

- A) lines 14–17 (“Particular . . . manufacturers.”)
- B) lines 19–21 (“The aggregate . . . connected.”)
- C) lines 24–26 (“Perhaps . . . truth.”)
- D) lines 31–33 (“Mutual . . . connection”)

9

As used in line 29, “mischievous” most nearly means

- A) disobedient.
- B) spirited.
- C) spiteful.
- D) damaging.

# History

10

Hamilton uses the term “National Resource” (line 53) most likely to emphasize

- A) the benefits of an export economy.
- B) the interdependence of industry.
- C) the importance of industrialization.
- D) the superiority of the United States.

11

Hamilton compares the latitudes of Virginia to those of the finest wool countries in Europe ( paragraph 5) mainly to support his assertion that

- A) the United States is capable of competing on the global market.
- B) the United States should focus on growing a limited number of crops.
- C) the agricultural prosperity of the South is limited by its geographical location.
- D) the South contributes directly to the prosperity of the nation.

# History

This passage is excerpted from Federalist Paper No. 5, published in 1787. In it, statesman John Jay discusses the potential effects of dividing the U.S. into several different nations.

The history of Great Britain is the one with which we are in general the best acquainted, and it gives us many useful lessons. We may profit by their experience without paying the price which it cost them. Although it seems obvious to  
 Line 5 common sense that the people of such an island should be but one nation, yet we find that they were for ages divided into three, and that those three were almost constantly embroiled in quarrels and wars with one another. Notwithstanding their true interest with respect to the continental nations was really  
 10 the same, yet by the arts and policy and practices of those nations, their mutual jealousies were perpetually kept inflamed, and for a long series of years they were far more inconvenient and troublesome than they were useful and assisting to each other.

Should the people of America divide themselves into three or four nations, would not the same thing happen? Would not similar jealousies arise, and be in like manner cherished? Instead of their being "joined in affection" and free from all apprehension of different interests," envy and jealousy would  
 20 soon extinguish confidence and affection, and the partial interests of each confederacy, instead of the general interests of all America, would be the only objects of their policy and pursuits. Hence, like most other *bordering* nations, they would always be either involved in disputes and war, or live  
 25 in the constant apprehension of them.

The most sanguine advocates for three or four confederacies cannot reasonably suppose that they would long remain exactly on an equal footing in point of strength, even if it was possible to form them so at first; but, admitting that to be practicable, yet what human contrivance can secure the continuance of such equality? Independent of those local circumstances which tend to beget and increase power in one part and to impede its progress in another, we must advert to the effects of that superior policy and good management  
 30 which would probably distinguish the government of one above the rest, and by which their relative equality in strength and consideration would be destroyed. For it cannot be presumed that the same degree of sound policy, prudence,

and foresight would uniformly be observed by each of these confederacies for a long succession of years.

Whenever, and from whatever causes, it might happen, and happen it would, that any one of these nations or confederacies should rise on the scale of political importance much above the degree of her neighbors, that moment would  
 45 those neighbors behold her with envy and with fear. Both those passions would lead them to countenance, if not to promote, whatever might promise to diminish her importance; and would also restrain them from measures calculated to advance or even to secure her prosperity. Much  
 50 time would not be necessary to enable her to discern these unfriendly dispositions. She would soon begin, not only to lose confidence in her neighbors, but also to feel a disposition equally unfavorable to them. Distrust naturally creates distrust, and by nothing is good-will and kind conduct  
 55 more speedily changed than by invidious jealousies and uncandid imputations, whether expressed or implied.

The North is generally the region of strength, and many local circumstances render it probable that the most Northern of the proposed confederacies would, at a period not very  
 60 distant, be unquestionably more formidable than any of the others. No sooner would this become evident than the *Northern Hive* would excite the same ideas and sensations in the more southern parts of America which it formerly did in the southern parts of Europe. Nor does it appear to be a rash  
 65 conjecture that its young swarms might often be tempted to gather honey in the more blooming fields and milder air of their luxurious and more delicate neighbors.

They who well consider the history of similar divisions and confederacies will find abundant reason to apprehend  
 70 that those in contemplation would in no other sense be neighbors than as they would be borderers; that they would neither love nor trust one another, but on the contrary would be a prey to discord, jealousy, and mutual injuries; in short, that they would place us exactly in the situations in which  
 75 some nations doubtless wish to see us, viz., *formidable only to each other*.

# History

1

The author's central claim in the passage is that

- A) since bordering nations are naturally competitive, the U. S. should avoid division.
- B) since Britain is experienced in the art of war, the U. S. should imitate their policies.
- C) since the North is stronger than the South, multiple confederacies are inevitable.
- D) since unity is critical to the future of the U. S., a new form of government is needed.

2

The main purpose of the passage is to

- A) warn against a potential form of government.
- B) argue for a particular diplomatic decision.
- C) defend a current form of government.
- D) explain a way in which science relates to politics.

3

The author includes the example of Britain in order to

- A) question the wisdom of establishing ties with foreign nations.
- B) provide historical evidence for his predictions.
- C) explain how a rival nation exercises diplomacy.
- D) challenge a foreign power to disclose its methods.

4

As used in line 27, the word "suppose" most nearly means

- A) admit.
- B) imply.
- C) require.
- D) expect.

5

The author implies that a Southern confederacy would mostly likely engage in what type of behavior?

- A) Impulsive
- B) Violent
- C) Passive-aggressive
- D) Diplomatic

6

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

- A) lines 31–37 ("Independent...destroyed.")
- B) lines 37–40 ("For...years.")
- C) lines 41–45 ("Whenever...fear.")
- D) lines 45–49 ("Both...prosperity.")

7

The author implies that a Northern confederacy would most likely engage in what kind of activity?

- A) Protection of bordering nations
- B) Exploitation of a weaker nation
- C) Development of international ties
- D) Introduction of domestic tariffs

8

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

- A) lines 51–53 ("She...them.")
- B) lines 53–56 ("Distrust...implied.")
- C) lines 57–61 ("The...others.")
- D) lines 64–67 ("Nor...neighbors.")

9

As used in line 62, the word "sensations" most nearly means

- A) triumphs.
- B) successes.
- C) emotions.
- D) celebrations.

10

The author states that the competition of bordering nations

- A) diminishes their international relevance.
- B) increases their joint military strength.
- C) reduces their economic inequality.
- D) damages their agricultural industries.

## History

---

11

Which choice would most clearly undermine the author's argument about the relations of bordering nations?

- A) Two bordering nations remain equal to each other in power and are constantly at war.
- B) Two bordering nations remain equal to each other in power and maintain peaceful relations.
- C) Two bordering nations are unequal in power, and the stronger nation conquers the weaker nation.
- D) Two bordering nations are unequal in power, and the weaker nation conquers the stronger nation.

# History

Passage 1 is excerpted from a speech delivered by Patrick Henry and Passage 2 is excerpted from a speech delivered by James Madison. Both speeches were delivered during the Virginia Commonwealth Debates of 1788. The two statesmen disagreed over whether the Articles of Confederation, the current form of government at that time, should be replaced by the U.S. Constitution.

## Passage 1

Guard with jealous attention the public liberty. Suspect every one who approaches that jewel. Unfortunately, nothing will preserve it but downright force. Whenever you give up  
 Line that force, you are inevitably ruined. I am answered by  
 5 gentlemen, that, though I might speak of terrors, yet the fact was, that we were surrounded by none of the dangers I apprehended. I conceive this new government to be one of those dangers: it has produced those horrors which distress many of our best citizens. We are come hither to preserve the  
 10 poor commonwealth of Virginia, if it can be possibly done: something must be done to preserve your liberty and mine. The Confederation, this same despised government, merits, in my opinion, the highest encomium: it carried us through a long and dangerous war; it rendered us victorious in that  
 15 bloody conflict with a powerful nation; it has secured us a territory greater than any European monarch possesses: and shall a government which has been thus strong and vigorous, be accused of imbecility, and abandoned for want of energy? Consider what you are about to do before you part with the  
 20 government. Take longer time in reckoning things; revolutions like this have happened in almost every country in Europe; similar examples are to be found in ancient Greece and ancient Rome — instances of the people losing their liberty by their own carelessness and the ambition of a  
 25 few. We are cautioned by the honorable gentleman, who presides, against faction and turbulence. I acknowledge that licentiousness\* is dangerous, and that it ought to be provided against: I acknowledge, also, the new form of government may effectually prevent it: yet there is another thing it will as  
 30 effectually do — it will oppress and ruin the people.

\*A lack of moral restraint.

## Passage 2

Before I proceed to make some additions to the reasons which have been adduced by my honorable friend over the way, I must take the liberty to make some observations on what was said by another gentleman, (Mr. Henry.) He told us  
 35 that this Constitution ought to be rejected because it endangered the public liberty, in his opinion, in many instances. Give me leave to make one answer to that observation: Let the dangers which this system is supposed to be replete with be clearly pointed out: if any dangerous and  
 40 unnecessary powers be given to the general legislature, let them be plainly demonstrated; and let us not rest satisfied with general assertions of danger, without examination. If powers be necessary, apparent danger is not a sufficient reason against conceding them. He has suggested that  
 45 licentiousness has seldom produced the loss of liberty; but that the tyranny of rulers has almost always effected it. Since the general civilization of mankind, I believe there are more instances of the abridgment of the freedom of the people by gradual and silent encroachments of those in power, than by  
 50 violent and sudden usurpations; but, on a candid examination of history, we shall find that turbulence, violence, and abuse of power, by the majority trampling on the rights of the minority, have produced factions and commotions, which, in republics, have, more frequently than any other cause,  
 55 produced despotism. If we go over the whole history of ancient and modern republics, we shall find their destruction to have generally resulted from those causes. If we consider the peculiar situation of the United States, and what are the sources of that diversity of sentiment which pervades its  
 60 inhabitants, we shall find great danger to fear that the same causes may terminate here in the same fatal effects which they produced in those republics. This danger ought to be wisely guarded against. Perhaps, in the progress of this discussion, it will appear that the only possible remedy for  
 65 those evils, and means of preserving and protecting the principles of republicanism, will be found in that very system which is now exclaimed against as the parent of oppression.

# History

1

The central claim of the author of Passage 1 concerning the Confederation is that this form of government is historically

- A) insufficient.
- B) successful.
- C) oppressive.
- D) dangerous.

2

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

- A) lines 7–9 (“I...citizens”)
- B) lines 9–11 (“We...mine”)
- C) lines 12–16 (“The...possesses”)
- D) lines 19–20 (“Consider...government”)

3

As used in line 20, the word “reckoning” most nearly means

- A) considering.
- B) computing.
- C) estimating.
- D) adding.

4

The author of Passage 1 uses the examples of ancient Greece and ancient Rome (line 23) most likely to

- A) demonstrate why political revolutions are inevitable over the course of history.
- B) explain why the Confederation should be condemned as an inefficient form of government.
- C) illustrate the results of public carelessness and individual ambition.
- D) argue against the oppressive power of the majority over a careless minority.

5

The author of Passage 2 implies that the author of Passage 1 does not

- A) give concrete proof for his arguments.
- B) care about the future of public liberty.
- C) consider the shortcomings of the Constitution.
- D) notice the danger of usurpation.

6

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

- A) lines 34–37 (“He...instances”)
- B) lines 37–39 (“Give...out”)
- C) lines 44–46 (“He...it”)
- D) lines 62–63 (“This...against”)

7

As used in line 48 of Passage 2, the word “abridgement” most nearly means

- A) abbreviation.
- B) concentration.
- C) summarization.
- D) reduction.

8

The author of Passage 2 states that the opinions of U. S. citizens are

- A) optimistic.
- B) divided.
- C) illogical.
- D) trivial.

9

The author of Passage 2 claims that public liberty is threatened by the majority’s abuse of power. This claim most clearly contrasts with the claim in Passage 1 that public liberty is threatened by

- A) an ambitious minority.
- B) an overactive majority.
- C) an immoral citizenry.
- D) an oppressive government.

## History

10

Which situation is most similar to the one described in lines 63–67 of Passage 2 (“Perhaps, in the progress...parent of oppression”)?

- A) a patient complains about a medical treatment, but then finds that it is the only possible cure
- B) an activist organizes a political demonstration, but then finds that it is for an unpopular cause
- C) a student completes an assignment, but then finds that it has received a failing grade
- D) a political candidate promises reform, but then finds that it is impossible to implement change

11

— The authors of both passages would agree that the Constitution could provide

- A) public liberty.
- B) moral restraint.
- C) increased democracy.
- D) legal protection.

# History

This passage is taken from Thomas Paine's preface to Rights of Man, originally published in 1791. Rights of Man was initially written as a response to Irish statesman Edmund Burke's attack on the French Revolution.

From the part Mr. Burke took in the American Revolution, it was natural that I should consider him a friend to mankind; and as our acquaintance commenced on that ground, it would have been more agreeable to me to have had cause to continue in that opinion than to change it.

At the time Mr. Burke made his violent speech last winter in the English Parliament against the French Revolution and the National Assembly, I was in Paris, and had written to him but a short time before to inform him how prosperously matters were going on. Soon after this I saw his advertisement of the Pamphlet he intended to publish: As the attack was to be made in a language but little studied, and less understood in France, and as everything suffers by translation, I promised some of the friends of the Revolution in that country that whenever Mr. Burke's Pamphlet came forth, I would answer it. This appeared to me the more necessary to be done, when I saw the flagrant misrepresentations which Mr. Burke's Pamphlet contains; and that while it is an outrageous abuse on the French Revolution, and the principles of Liberty, it is an imposition on the rest of the world.

[...]

I had seen enough of the miseries of war, to wish it might never more have existence in the world, and that some other mode might be found out to settle the differences that should occasionally arise in the neighbourhood of nations. This certainly might be done if Courts were disposed to set honesty about it, or if countries were enlightened enough not to be made the dupes of Courts. The people of America had been bred up in the same prejudices against France, which at that time characterised the people of England; but experience and an acquaintance with the French Nation have most effectually shown to the Americans the falsehood of those prejudices; and I do not believe that a more cordial and confidential intercourse exists between any two countries than between America and France.

When I came to France, in the spring of 1787, the Archbishop of Thoulouse was then Minister, and at that time highly esteemed. I became much acquainted with the private Secretary of that Minister, a man of an enlarged benevolent heart; and found that his sentiments and my own perfectly agreed with respect to the madness of war, and the wretched

impolicy of two nations, like England and France, continually worrying each other, to no other end than that of a mutual increase of burdens and taxes. That I might be assured I had not misunderstood him, nor he me, I put the substance of our opinions into writing and sent it to him; subjoining a request, that if I should see among the people of England, any disposition to cultivate a better understanding between the two nations than had hitherto prevailed, how far I might be authorised to say that the same disposition prevailed on the part of France? He answered me by letter in the most unreserved manner, and that not for himself only, but for the Minister, with whose knowledge the letter was declared to be written.

I put this letter into the hands of Mr. Burke almost three years ago, and left it with him, where it still remains; hoping, and at the same time naturally expecting, from the opinion I had conceived of him, that he would find some opportunity of making good use of it, for the purpose of removing those errors and prejudices which two neighbouring nations, from the want of knowing each other, had entertained, to the injury of both.

When the French Revolution broke out, it certainly afforded to Mr. Burke an opportunity of doing some good, had he been disposed to it; instead of which, no sooner did he see the old prejudices wearing away, than he immediately began sowing the seeds of a new inveteracy, as if he were afraid that England and France would cease to be enemies. That there are men in all countries who get their living by war, and by keeping up the quarrels of Nations, is as shocking as it is true; but when those who are concerned in the government of a country make it their study to sow discord and cultivate prejudices between Nations, it becomes the more unpardonable.

# History

1

In the passage, Paine expresses the opinion that war is

- A) a practice that encourages additional clashes within a nation.
- B) a barbaric activity that fails to resolve longstanding conflicts.
- C) an undesirable method of settling disputes between nations.
- D) an effective way to end religious disputes but not land disputes.

2

Which of the following situations, if true, would significantly weaken Paine’s argument against Burke?

- A) Burke publishes a second pamphlet encouraging the British to support the French people during the French Revolution.
- B) Burke moves to America to encourage American support of the French Revolution.
- C) Burke responds to the Secretary’s letter and accuses him of ignoring the grievances of the French people.
- D) Burke decides to leave politics to become a practicing lawyer.

3

The main purpose of the third paragraph (lines 22–35), is to

- A) accuse court representatives of endorsing violence rather than negotiating.
- B) draw parallels between the American Revolution and the French Revolution.
- C) provide an example of a peaceful resolution between quarreling nations.
- D) suggest that the American people encouraged the violent overthrow of the French monarchy.

4

It can reasonably be inferred from the passage that both Paine and the Archbishop of Tholouse hope for

- A) a violent overthrow of the French monarchy.
- B) a peaceful resolution to the people’s grievances in France.
- C) the creation of a multi-party democracy in France.
- D) stronger ties between the Church and the French monarchy.

5

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

- A) lines 36–38 (“When...esteemed.”)
- B) lines 38–41 (“I became...war.”)
- C) lines 44–46 (“That I..to him.”)
- D) lines 51–54 (“He answered...written.”)

6

In line 48, the word “cultivate” most nearly means

- A) develop.
- B) harvest.
- C) prepare.
- D) discipline.

7

It can reasonably be inferred that, at the onset of the French Revolution, Burke

- A) was unaware of the existence of the Secretary’s letter.
- B) strove to encourage peace between England and France.
- C) pledged his complete devotion to the French revolutionaries.
- D) stirred animosity against the French in England.

# History

8

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

- A) lines 1–5 (“From...change it.”)
- B) lines 22–25 (“I had...of nations.”)
- C) lines 65–67 (“instead...inveteracy.”)
- D) lines 68–70 (“That...is true.”)

9

In line 67, the word “sowing” most nearly means

- A) spreading.
- B) pitching.
- C) scattering.
- D) drilling.

10

In the last sentence of the passage, Paine refers to “those who are concerned in the government” most likely to

- A) suggest that Burke should be held to a different standard than ordinary citizens.
- B) highlight Paine’s own importance in governmental affairs.
- C) attack the French monarchy for being unresponsive to the French people.
- D) imply that politicians are more intelligent than ordinary citizens.

11

Paine would most likely support which of the following 20th-century movements?

- A) The African-American civil rights movement, because he suggests that segregation is unethical.
- B) The women’s suffrage movement in England, because he suggests that all citizens should have the right to vote.
- C) The civil disobedience movement in India, because he suggests that violence should be avoided as a means of fixing social problems.
- D) The fascist movement in Germany and Italy, because he suggests that authoritarian governments promote national unity.

# History

This passage is adapted from John Muir, "Save the Redwoods."  
Originally published in 1920 in Sierra Club Bulletin.

We are often told that the world is going from bad to worse, sacrificing everything to mammon\*. But this righteous uprising in defense of God's trees in the midst of exciting politics and wars is telling a different story, and every Sequoia, I fancy, has heard the good news and is waving its branches for joy. The wrongs done to trees, wrongs of every sort, are done in the darkness of ignorance and unbelief, for when light comes the heart of the people is always right. Forty-seven years ago one of these Calaveras King Sequoias was laboriously cut down, that the stump might be had for a dancing-floor. Another, one of the finest in the grove, more than three hundred feet high, was skinned alive to a height of one hundred and sixteen feet from the ground and the bark sent to London to show how fine and big that Calaveras tree was—as sensible a scheme as skinning our great men would be to prove their greatness. Now some millmen want to cut all the Calaveras trees into lumber and money. But we have found a better use for them. No doubt these trees would make good lumber after passing through a sawmill, as George Washington after passing through the hands of a French cook would have made good food. But both for Washington and the tree that bears his name higher uses have been found.

Could one of these Sequoia Kings come to town in all its godlike majesty so as to be strikingly seen and allowed to plead its own cause, there would never again be any lack of defenders. And the same may be said of all the other Sequoia groves and forests of the Sierra with their companions and the noble Sequoia sempervirens, or redwood, of the coast mountains. In these noble groves and forests to the southward of the Calaveras Grove the axe and saw have long been busy, and thousands of the finest Sequoias have been felled, blasted into manageable dimensions, and sawed into lumber by methods destructive almost beyond belief, while fires have spread still wider and more lamentable ruin.

For the thousands of acres of Sequoia forest outside of the reservation and national parks, and in the hands of lumbermen, no help is in sight. Probably more than three times as many Sequoias as are contained in the whole Calaveras Grove have been cut into lumber every year for the last twenty-six years without let or hindrance, and with scarce a word of protest on the part of the public, while at the first whisper of the bonding of the Calaveras Grove to lumbermen most everybody rose in

alarm. This righteous and lively indignation on the part of Californians after the long period of deathlike apathy, in which they have witnessed the destruction of other groves unmoved, seems strange until the rapid growth that right public opinion has made during the last few years is considered and the peculiar interest that attaches to the Calaveras giants. They were the first discovered and are best known. These kings of the forest, the noblest of a noble race, rightly belong to the world, but as they are in California we cannot escape responsibility as their guardians. Fortunately the American people are equal to this trust, or any other that may arise, as soon as they see it and understand it.

Any fool can destroy trees. They cannot defend themselves or run away. And few destroyers of trees ever plant any; nor can planting avail much toward restoring our grand aboriginal giants. It took more than three thousand years to make some of the oldest of the Sequoias, trees that are still standing in perfect strength and beauty, waving and singing in the mighty forests of the Sierra. Through all the eventful centuries since Christ's time, and long before that, God has cared for these trees, saved them from drought, disease, avalanches, and a thousand storms; but he cannot save them from sawmills and fools; this is left to the American people.

\*Material wealth, often associated with greed

# History

1

The main purpose of the passage is to

- A) increase awareness of the fragility of forest ecosystems.
- B) encourage support for the preservation of natural land.
- C) clarify the goals of the emerging naturalist movement.
- D) shed light on a debate about environmental policy.

6

The main purpose of the author's comment about George Washington (lines 17-20) is most likely to

- A) ridicule the idea of valuing utility above life.
- B) allude to the historical age of the Sequoias.
- C) equate the Sequoias with a symbol of America.
- D) downplay the seriousness of the logging profession.

2

Which choice best describes the author's perspective on nature?

- A) He is awestruck by its spiritual quality.
- B) He is unimpressed by its material resources.
- C) He is incredulous over its swift decline.
- D) He is ashamed of its exploitation by humans.

7

As used in line 21, "higher" more nearly means

- A) superior.
- B) advanced.
- C) complex.
- D) sophisticated.

3

The passage makes the most extensive use of which type of evidence?

- A) Expert testimony
- B) Logical comparisons
- C) Emotional appeal
- D) Personal anecdotes

8

It can reasonably be inferred from the discussion of the thousands of acres of Sequoia Forest (lines 35-37) that

- A) lawmakers have been slower to protect natural sites in California than in other states.
- B) laws have already been established to protect natural sites in some areas of the state.
- C) citizens have won legal battles against loggers and milling companies
- D) the Sequoias in Calaveras Grove have been classified as endangered.

4

It can be inferred from the first paragraph that the author believes that people primarily are

- A) victims of a cruel world.
- B) energized by controversy.
- C) self-serving and negligent.
- D) inherently sound-minded.

5

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

- A) lines 1-2 ("We are ... mammon")
- B) lines 2-4 ("But this ... story")
- C) lines 5-8 ("The wrongs ... right")
- D) lines 15-17 ("Now some ... money")

9

In paragraph 4 (lines 50), the references to the Sequoias as kings and as "the noblest of a noble race" primarily serve to

- A) create a vivid image to emphasize the immense height of the trees.
- B) convey the superiority of the Sequoias to other trees in California.
- C) highlight the beauty of the trees in Calaveras Grove in particular.
- D) personify the trees to generate compassion for their plight.

# History

10

A central claim in the passage is that

- A) humans struggle with the desire to control nature.
- B) nature will always be at the mercy of human selfishness.
- C) humans are entrusted with the care of their environment.
- D) nature becomes more precious to humans after they see it destroyed.

11

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

- A) lines 43-49 ("This righteous ... giants")
- B) lines 49-50 ("They were ... known")
- C) lines 55-56 ("Any fool ... run away")
- D) lines 61-65 ("Through all ... people")

# History

Passage 1 is an excerpt from a speech by Senator Everett Dirksen. Passage 2 is an excerpt from a speech by Senate Majority Leader Mike Mansfield. Both speeches were delivered on the floor of the United States Senate in 1964. In 1964, the United States Senate debated the Civil Rights Act, a bill outlawing discrimination based upon race, color, religion, sex, or nationality. Several senators opposed to the bill attempted to block its passage, prompting a response from the bill's supporters.

## Passage 1

Today the Senate is stalemated in its efforts to enact a civil rights bill, one version of which has already been approved by the House by a vote of more than 2 to 1. That the Senate wishes to act on a civil rights bill can be divined from the fact that the motion to take up was adopted by a vote of 67 to 17.

There are many reasons why cloture\* should be invoked and a good civil rights measure enacted.

First. It is said that on the night he died, Victor Hugo wrote in his diary, substantially this sentiment:

“Stronger than all the armies is an idea whose time has come.”

The time has come for equality of opportunity in sharing in government, in education, and in employment. It will not be stayed or denied. It is here.

Second. Years ago, a professor who thought he had developed an incontrovertible scientific premise submitted it to his faculty associates. Quickly they picked it apart. In agony he cried out, "Is nothing eternal?" To this one of his associates replied, "Nothing is eternal except change."

Since the act of 1875 on public accommodations and the Supreme Court decision of 1883 which struck it down, America has changed. The population then was 45 million. Today it is 190 million. In the Pledge of Allegiance to the Flag we intone, "One nation, under God." And so it is. It is an integrated nation. Air, rail, and highway transportation make it so. A common language makes it so. A tax pattern which applies equally to white and nonwhite makes it so. Literacy makes it so. The mobility provided by eighty million autos makes it so. The accommodations laws in thirty-four states and the District of Columbia makes it so. The fair employment practice laws in thirty states make it so.

Yes, our land has changed since the Supreme Court decision of 1883.

35 As Lincoln once observed:

“The occasion is piled high with difficulty and we must rise with the occasion. As our case is new, so we must think anew and act anew. We must first disenthral ourselves and then we shall save the Union.”

\* cloture: a legislative procedure for ending a debate and taking a vote

## Passage 2

40 Mr. President:\*

Speaking for myself, may I say at the outset that I should have preferred it had the issue been resolved before my time as a Senator, or had it not come to the fore until after. The Senator from Montana has no lust for conflict on this matter.

45 Yet this question is one which invites conflict, for it divides deeply.

But, Mr. President, great public issues are not subject to our personal timetables. They do not accommodate themselves to our individual preference or convenience.

50 They emerge in their own way and in their own time. We do not compel them. They compel us.

We look in vain if we look backward to past achievements which might spare this Senate the necessity of a difficult decision on the civil rights question. We hope in vain if we

55 hope that this issue can be put over safely to another tomorrow, to be dealt with by another generation of Senators.

The time is now. The crossroads is here in the Senate.

To be sure, the issue will not be fully resolved by what we do today. Its resolution depends also on what is done tomorrow and on many tomorrows. Nor will the issue be fully resolved by the Senate or the Congress. Indeed, it will involve all Americans and all the institutions, public and private, which hold us as a society of diversity in one nation, and it will involve all for a long time to come. In truth, it is a universal issue which, for this nation, having begun with the Declaration of Independence and persisted through the decades, will hardly dissolve in the Senate of the 88th Congress.

70 Nevertheless, at this moment in the nation's history, it is the Senate's time and turn.

But, insofar as the majority leader is concerned, he must state to the Senate that it would be a tragic error if this body,

# History

as a whole, were to elect the closed-eyes course of inaction.

That course, Mr. President, would disclose a cavalier

- 75 disinterest or a legislative impotence on this issue, and either would be completely inconsonant with the serious domestic situation which now confronts us.

It is bad enough to evade decision on any major proposal of any President. It is inexcusable in this issue, which has

- 80 drawn a curtain of uncertainty and insecurity over the entire nation, and over which blood has already run in the streets.

In these circumstances, I cannot believe that this Senate will abdicate its constitutional responsibilities.

\*The presiding officer of the United States Senate is addressed as “Mr. President” or “Madame President.”

1

As used in line 4, “divined” most nearly means

- A) anticipated.
- B) deduced.
- C) proven.
- D) hypothesized.

2

In Passage 1, the quotation from Victor Hugo mainly serves to

- A) reveal that Victor Hugo would lend his support to civil rights reform.
- B) illustrate the author's assertion that the Senate is eager to enact civil rights reform.
- C) offer criticism of the United States military for failing to enforce civil rights reform.
- D) introduce the author's argument that civil rights reform should not be postponed.

3

The author of Passage 1 implies that in comparison to its past, present-day America

- A) places an increased value on spirituality.
- B) provides greater equality of opportunity.
- C) holds formal education in higher esteem.
- D) displays a decreased interest in traditional social values.

4

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

- A) lines 13–15 (“The . . . here”)
- B) lines 21–23 (“Since . . . changed”)
- C) lines 25–27 (“It...so”)
- D) lines 35–39 (“As . . . Union”)

5

The author of Passage 2 characterizes the controversy surrounding civil rights reform as

- A) premature.
- B) constructive.
- C) unavoidable.
- D) unwarranted.

6

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

- A) lines 45–46 (“Yet . . . deeply”)
- B) lines 58–60 (“To . . . tomorrows”)
- C) lines 61–64 (“Indeed . . . come”)
- D) lines 78–81 (“It . . . streets”)

7

Which piece of evidence would best strengthen the assertion made in Passage 2 about the origin of the national discussion of rights?

- A) An excerpt from a founding document addressing the ideal of equal opportunity
- B) A quotation from a World War II-era Senate debate surrounding the limits of personal freedom
- C) An excerpt from a recent Supreme Court decision regarding civil liberties
- D) Direct testimony from several individuals who will benefit from civil rights reform

# History

8

According to Passage 2, the failure of the Senate to pass the Civil Rights Act would suggest that the

- A) public is not yet ready for the passage of civil rights legislation.
- B) Senate is either uninterested in or unable to enact reform.
- C) Senate recognizes that civil rights issues cannot be dealt with all at one time.
- D) President of the United States must lead the way in enacting reform.

9

The stance taken by both authors is best described as that of

- A) an idealist setting forth universal principles about right and wrong.
- B) a mediator attempting to find common ground between opposing viewpoints.
- C) a realist outlining a clear course of action based upon evidence.
- D) a neutral observer objectively summarizing both sides of a controversy.

10

— In their discussion of civil rights, the authors of Passage 1 and Passage 2 both claim that the issue

- A) must be addressed, although they would prefer to postpone debate until a later time.
- B) will not be resolved by the bill under discussion, though the bill remains necessary.
- C) must be dealt with immediately through direct action in the Senate.
- D) should not be discussed until controversy surrounding the bill has died down.

11

In presenting evidence supporting civil rights reform, both authors cite

- A) social factors that have made reform necessary.
- B) the judicial precedent that makes reform legal.
- C) the historical precedent that makes reform patriotic.
- D) the popular support that will make reform politically feasible.

# History

This passage is excerpted from William Graham Sumner, "The Absurd Effort to Make the World Over," originally published in 1894. Sumner was an outspoken economist and highly influential sociology professor at Yale University.

Line It will not probably be denied that the burden of proof is  
on those who affirm that our social condition is utterly  
diseased and in need of radical regeneration. My task at  
present, therefore, is entirely negative and critical: to  
5 examine the allegations of fact and the doctrines which are  
put forward to prove the correctness of the diagnosis and to  
warrant the use of the remedies proposed.

When anyone asserts that the class of skilled and unskilled  
manual laborers of the United States is worse off now in  
10 respect to diet, clothing, lodgings, furniture, fuel, and lights;  
in respect to the age at which they can marry; the number of  
children they can provide for; the start in life which they can  
give to their children, and their chances of accumulating  
capital, than they ever have been at any former time, he  
15 makes a reckless assertion for which no facts have been  
offered in proof. Upon an appeal to facts, the contrary of this  
assertion would be clearly established. It suffices, therefore,  
to challenge those who are responsible for the assertion to  
make it good.

20 Nine-tenths of the socialistic and semi-socialistic, and  
sentimental or ethical, suggestions by which we are  
overwhelmed come from failure to understand the  
phenomena of the industrial organization and its expansion.  
It controls us all because we are all in it. It creates the  
25 conditions of our existence, sets the limits of our social  
activity, regulates the bonds of our social relations,  
determines our conceptions of good and evil, suggests our  
life-philosophy, molds our inherited political institutions, and  
reforms the oldest and toughest customs, like marriage and  
30 property. I repeat that the turmoil of heterogeneous and  
antagonistic social whims and speculations in which we live  
is due to the failure to understand what the industrial  
organization is and its all-pervading control over human life,  
while the traditions of our school of philosophy lead us  
35 always to approach the industrial organization, not from the  
side of objective study, but from that of philosophical  
doctrine. Hence it is that we find that the method of  
measuring what we see happening by what are called ethical

standards, and of proposing to attack the phenomena by  
40 methods thence deduced, is so popular.

The advance of a new country from the very simplest  
social coordination up to the highest organization is a most  
interesting and instructive chance to study the development  
of the organization. It has of course been attended all the way  
45 along by stricter subordination and higher discipline. All  
organization implies restriction of liberty. The gain of power  
is won by narrowing individual range. The methods of  
business in colonial days were loose and slack to an  
inconceivable degree. The movement of industry has been all  
50 the time toward promptitude, punctuality, and reliability. It  
has been attended all the way by lamentations about the good  
old times; about the decline of small industries; about the lost  
spirit of comradeship between employer and employee; about  
the narrowing of the interests of the workman; about his  
55 conversion into a machine or into a "ware," and about  
industrial war. These lamentations have all had reference to  
unquestionable phenomena attendant on advancing  
organization. In all occupations the same movement is  
discernible in the learned professions, in schools, in trade,  
60 commerce, and transportation. It is to go on faster than ever,  
now that the continent is filled up by the first superficial  
layer of population over its whole extent and the  
intensification of industry has begun. The great inventions  
both make the intension of the organization possible and  
65 make it inevitable, with all its consequences, whatever they  
may be. I must expect to be told here, according to the  
current fashions of thinking, that we ought to control the  
development of the organization. The first instinct of the  
modern man is to get a law passed to forbid or prevent what,  
70 in his wisdom, he disapproves.

Now the intensification of the social organization is what  
gives us greater social power. It is to it that we owe our  
increased comfort and abundance. We are none of us ready to  
sacrifice this. On the contrary, we want more of it. We would  
75 not return to the colonial simplicity and the colonial exiguity  
if we could. If not, then we must pay the price. Our life is  
bounded on every side by conditions.

# History

1

The main purpose of the passage is to

- A) delineate the course of industrial progress.
- B) question the practicality of democratic ideals.
- C) encourage support for individual liberties.
- D) highlight the uselessness of social reform.

2

Over the course of the passage, the main focus shifts from  
A) an overview of industrial advancement to a clarification of the problem.

- B) an acknowledgement of the problem with industrial advancement to the proposal of a solution.
- C) an assembling of arguments against industrial advancement to a justification of its effects.
- D) an explanation of industrial advancement to an admission of the drawbacks.

3

The main purpose of listing the assertions in the second paragraph (lines 8–19) is to

- A) outline common complaints and portray them as ludicrous.
- B) account for facts but stress their irrelevancy to the issue.
- C) identify opposing claims and characterize them as speculative.
- D) note possible solutions but highlight their ineffectiveness.

4

As used in line 15, “reckless” most nearly means

- A) unfounded.
- B) impulsive.
- C) misguided.
- D) negligent.

5

It can be inferred from the discussion of the movement of industry that the author believes that people have a natural tendency to

- A) resist technological change.
- B) encourage ethical actions.
- C) control the course of events.
- D) distrust the people in power.

6

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

- A) lines 20–23 (“Nine-tenths . . . its expansion”)
- B) lines 37–40 (“Hence . . . popular”)
- C) lines 50–52 (“It has been. . . times”)
- D) lines 68–70 (“The first. . . disapproves”)

7

The author’s main claim about industrial development is that it

- A) leads to tension among social groups.
- B) reflects a natural evolution of society.
- C) necessitates social reform.
- D) magnifies societal deficiencies.

8

The main purpose of the words “turmoil,” “heterogeneous,” and “antagonistic” (lines 30–31) is most likely to

- A) highlight divisions in philosophical doctrine.
- B) draw analogies to revolutionary upheaval.
- C) convey the instability of modern life.
- D) stress the conflict between man and society.

9

Which choice best describes the author’s perspective on individual limitation?

- A) It is a burden of the middle class.
- B) It is most effective in industrial societies.
- C) It is a consequence of free enterprise.
- D) It is both natural and inevitable.

10

Based on the passage, it can be inferred that the author would have been most critical of those who

- A) defended unskilled laborers.
- B) condemned the capitalist state.
- C) promoted middle class values.
- D) attacked the principles of democracy.

## History

---

11

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

- A) lines 47–49 (“The methods . . . degree”)
- B) lines 49–50 (The movement . . . reliability”)
- C) lines 58–60 (In all occupations . . . transportation”)
- D) lines 71–72 (“Now the . . . social power”)

# History

Passage 1 is excerpted from Noah Webster, "On the Education of Youth in America," originally published in 1790. Passage 2 is excerpted from Benjamin Rush, "Of the Mode of Education Proper in a Republic," originally published in 1798.

The symbol [1] indicates that the following sentence is referenced in a question.

## Passage 1

Another defect in our schools, which, since the revolution, is become inexcusable, is the want of proper books. The collections which are now used consist of essays that respect foreign and ancient nations. The minds of youth are perpetually led to the history of Greece and Rome or to Great Britain; boys are constantly repeating the declamations of Demosthenes and Cicero, or debates upon some political question in the British Parliament. These are excellent specimens of good sense, polished stile and perfect oratory; but they are not interesting to children. They cannot be very useful, except to young gentlemen who want them as models of reasoning and eloquence, in the pulpit or at the bar.

But every child in America should be acquainted with his own country. He should read books that furnish him with ideas that will be useful to him in life and practice. As soon as he opens his lips, he should rehearse the history of his own country; he should lisp the praise of liberty, and of those illustrious heroes and statesmen, who have wrought a revolution in her favor.

A selection of essays, respecting the settlement and geography of America; the history of the late revolution and of the most remarkable characters and events that distinguished it, and a compendium of the principles of the federal and provincial governments, should be the principal school book in the United States. These are interesting objects to every man; they call home the minds of youth and fix them upon the interests of their own country, and they assist in forming attachments to it, as well as in enlarging the understanding.

"It is observed by the great Montesquieu, that the laws of education ought to be relative to the principles of the government."

In despotic governments, the people should have little or no education, except what tends to inspire them with a servile fear. Information is fatal to despotism. In monarchies, education should be partial, and adapted to the rank of each class of citizens. But "in a republican government," says the same writer, "the whole power of education is required." Here every class of people should know and love the laws. This knowledge should be diffused

by means of schools and newspapers; and an attachment to the laws may be formed by early impressions upon the mind. Two regulations are essential to the continuance of republican governments: [1] Such a distribution of lands and such principles of descent and alienation, as shall give every citizen a power of acquiring what his industry merits. [2] Such a system of education as gives every citizen an opportunity of acquiring knowledge and fitting himself for places of trust. These are fundamental articles; the sine qua non of the existence of the American republics.

## Passage 2

The business of education has acquired a new complexion by the independence of our country. The form of government we have assumed, has created a new class of duties to every American. It becomes us, therefore, to examine our former habits upon this subject, and in laying the foundations for nurseries of wise and good men, to adapt our modes of teaching to the peculiar form of our government.

The first remark that I shall make upon this subject is, that an education in our own, is to be preferred to an education in a foreign country. The principle of patriotism stands in need of the reinforcement of prejudice, and it is well known that our strongest prejudices in favour of our country are formed in the first one and twenty years of our lives. The policy of the Lacedemonians is well worthy of our imitation. When Antipater demanded fifty of their children as hostages for the fulfillment of a distant engagement, those wise republicans refused to comply with his demand, but readily offered him double the number of their adult citizens, whose habits and prejudices could not be shaken by residing in a foreign country. Passing by, in this place, the advantages to the community from the early attachment of youth to the laws and constitution of their country, I shall only remark, that young men who have trodden the paths of science together, or have joined in the same sports, whether of swimming, skating, fishing, or hunting, generally feel, thro' life, such ties to each other, as add greatly to the obligations of mutual benevolence.

I conceive the education of our youth in this country to be peculiarly necessary in Pennsylvania, while our citizens are composed of the natives of so many different kingdoms in Europe. Our schools of learning, by producing one general, and uniform system of education, will render the mass of the people more homogeneous, and thereby fit them more easily for uniform and peaceable government.

# History

1

The authors of both passages would agree that education in the United States should

- A) continue through adulthood.
- B) engender national pride.
- C) reflect educational philosophies.
- D) mirror classroom methods.

2

The authors of both passages claim that U.S. citizens have a duty to

- A) learn the history of their government.
- B) advocate progressive reforms.
- C) support public education.
- D) participate in the political process.

3

What do both authors believe is the goal of education in a republic?

- A) To encourage independent thinking
- B) To reflect progressive beliefs
- C) To facilitate industrial progress
- D) To support democratic ideals

4

In Passage 1, the author uses the terms “praise of liberty” and “illustrious heroes and statesmen” (lines 17–18) most likely to

- A) elevate the principles of democracy over those of other government systems.
- B) stimulate the desire to preserve the democratic traditions of the United States.
- C) quote words of the founding fathers to reinforce their significance to the nation.
- D) convey the significance of rhetoric in conveying ideas of national importance.

5

Based on the first passage, why does the author consider the books in the U.S. educational system improper?

- A) They contain language that is intelligible only to adults.
- B) They place too much emphasis on world politics.
- C) They fail to teach ideas that are useful to U.S. citizens.
- D) They exclude the majority of the world’s literature.

6

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

- A) lines 2–4 (“The collection . . . nations”)
- B) lines 6–8 (“Boys . . . Parliament”)
- C) lines 8–10 (“These are . . . children”)
- D) lines 14–15 (“He should . . . practice”)

7

As used in line 62 of Passage 2, “prejudice” most nearly means

- A) partiality.
- B) preconception.
- C) discrimination.
- D) intolerance.

8

In Passage 1, the author uses the quote by Montesquieu (lines 30–32) mainly to support his assertion that

- A) the U.S. educational system is badly in need of reform.
- B) educational policies in many countries violate citizen’s rights.
- C) education in the United States should be regulated by federal laws.
- D) public education is a powerful tool of government.

# History

9

In Passage 2, the story about the Lacedemonians and Antipater primarily serves to

- A) contrast the practices of democracies and dictatorships.
- B) advocate the early indoctrination of principles.
- C) convey the superiority of the U.S. political system.
- D) question the validity of ancient philosophies.

11

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

- A) lines 54-58 ("It becomes ... our government")
- B) lines 74-78 ("Young men ... benevolence")
- C) lines 79-82 ("I conceive ... Europe")
- D) lines 82-85 ("Our schools ... government")

10

A central idea in Passage 2 is that education in the United States should

- A) rectify inequalities among the states.
- B) unify the citizens in a common bond.
- C) support a culturally diverse population.
- D) place heavy emphasis on teaching government.

# History

Passage 1 is an excerpt from the "Declaration of Sentiments," presented by Elizabeth Cady Stanton on July 19-20, 1848, at the Women's Rights Convention at Seneca Falls. Passage 2 is adapted from a speech delivered to the Congress of Women in May 1893 by Lucy Stone, "The Progress of Fifty Years."

## Passage 1

When, in the course of human events, it becomes necessary for one portion of the family of man to assume among the people of the earth a position different from that which they  
Line have hitherto occupied, but one to which the laws of nature  
5 and of nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes that impel them to such a course.

We hold these truths to be self-evident: that all men and women are created equal; that they are endowed by their  
10 Creator with certain inalienable rights; that among these are life, liberty, and the pursuit of happiness; that to secure these rights governments are instituted, deriving their just powers from the consent of the governed. Whenever any form of Government becomes destructive of these ends, it is the right  
15 of those who suffer from it to refuse allegiance to it, and to insist upon the institution of a new government, laying its foundation on such principles, and organizing its powers in such form as to them shall seem most likely to effect their safety and happiness. Prudence, indeed, will dictate that  
20 governments long established should not be changed for light and transient causes; and accordingly, all experience hath shown that mankind are more disposed to suffer, while evils are sufferable, than to right themselves by abolishing the forms to which they are accustomed. But when a long train of  
25 abuses and usurpations, pursuing invariably the same object, evinces a design to reduce them under absolute despotism, it is their duty to throw off such government, and to provide new guards for their future security. Such has been the patient sufferance of the women under this government, and such is  
30 now the necessity which constrains them to demand the equal station to which they are entitled.

## Passage 2

The commencement of the last fifty years is about the beginning of that great change and improvement in the condition of women which exceeds all the gains of hundreds  
35 of years before.

Four years in advance of the last fifty, in 1833, Oberlin College, in Ohio, was founded. Its charter declared its grand object, - "To give the most useful education at the least expense of health, time, and money, and to extend the  
40 benefits of such education to both sexes and to all classes" . . . .

The anti-slavery cause had come to break stronger fetters than those that held the slave. The idea of equal rights was in the air. The wail of the slave, his clanking fetters, his  
45 utter need, appealed to everybody. Women heard. They went out to speak for the slaves. . . . Such a thing had never been heard of. An earthquake shock could hardly have startled the community more. . . . But, with anointed lips and a consecration which put even life itself at stake, these  
50 peerless women pursued the even tenor of their way, saying to their opponents only: "Woe is me, if I preach not this gospel of freedom for the slave." . . .

Half a century ago women were at an infinite disadvantage in regard to their occupations. The idea that  
55 their sphere was at home, and only at home, was like a band of steel on society. . . . Every departure from these conceded things was met with the cry, "You want to get out of your sphere," or, "To take women out of their sphere;" and that was to fly in the face of Providence, to unsex yourself in  
60 short, to be monstrous women, women who, while they orated in public, wanted men to rock the cradle and wash the dishes. We pleaded that whatever was fit to be done at all might with propriety be done by anybody who did it well; that the tools belonged to those who could use them;  
65 that the possession of a power presupposed a right to its use. This was urged from city to city, from state to state. Women were encouraged to try new occupations. We endeavored to create that wholesome discontent in women that would compel them to reach out after far better  
70 things. . . .

The last half century has gained for women the right to the highest education and entrance to all professions and occupations, or nearly all. . . . These things have not come of themselves. They could not have occurred except as the  
75 great movement for women has brought them out and about. They are part of the eternal order, and they have come to stay. Now all we need is to continue to speak the truth fearlessly, and we shall add to our number those who will turn the scale to the side of equal and full justice in all  
80 things.

# History

1

It can be reasonably inferred from Passage 1 that the Declaration of Sentiments was created in part to do which of the following?

- A) Alert an oppressed group to the injustices they face.
- B) Explain to others the motivation behind an action.
- C) Argue against a recently enacted piece of legislation.
- D) Expand on a topic that has been receiving undue public attention.

2

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

- A) lines 1–4 (“When...occupied”)
- B) lines 5–7 (“a decent...course”)
- C) lines 8–9 (“We...equal”)
- D) lines 19–21 (“Prudence...causes”)

3

In line 8, Stanton uses the phrase “we hold these truths to be self-evident” from the United States Declaration of Independence most likely in order to suggest that

- A) it is well-known that the demands set forth in the Declaration of Independence were not inclusive of women.
- B) many people have forgotten the original intentions behind the Declaration of Independence.
- C) the Declaration of Sentiments aims to simplify the claims made in the Declaration of Independence.
- D) the Declaration of Independence and the Declaration of Sentiments are based on the same fundamental concept

4

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

- A) arranged.
- B) encouraged.
- C) willing.
- D) available.

5

In the second paragraph of Passage 2 (lines 36–41), Stone refers to the founding of Oberlin College most likely in order to

- A) inspire listeners to campaign for more colleges to begin admitting women.
- B) call attention to an institution that was slow to embrace social change.
- C) inform listeners of her own education and credentials.
- D) highlight an early event in the period of social change she is discussing.

6

In Passage 2, Stone suggests that a person’s occupation should be determined by his or her

- A) capabilities rather than his or her gender.
- B) interests rather than his or her skills.
- C) preferences rather than his or her prior experience.
- D) education rather than his or her socioeconomic background.

7

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

- A) lines 53–54 (“Half ... occupations”)
- B) lines 58–62 (“that was ... dishes”)
- C) lines 62–64 (“We ... them”)
- D) lines 67–70 (“We ... things”)

8

Based on Passage 2, which statement best reflects Stone’s view of progress in women’s education?

- A) Persistent effort has led to opportunities that far exceed those previously available.
- B) Coordinated work has led to a select few opportunities becoming available to women.
- C) Advances have been steady but new opportunities need to increase dramatically in pace.
- D) Women’s achievements have made them more successful but have limited opportunities for men.

## History

9

Which choice best describes the relationship between the two passages?

- A) Passage 1 calls for a change and Passage 2 recounts advances that have occurred since that call for change.
- B) Passage 1 raises a question that Passage 2 answers.
- C) Passage 1 makes an argument that Passage 2 undermines.
- D) Passage 1 endorses an approach to a problem and Passage 2 proposes an alternate approach to the problem.

10

How do Stanton and Stone differ in their discussions of women's equality?

- A) Stanton outlines a plan for women to achieve equality, while Stone focuses on the theory of progress.
- B) Stanton makes a broad argument that women should be treated fairly, while Stone provides concrete examples of women's progress.
- C) Stanton discusses women's equality in general terms, while Stone exclusively discusses equality in education.
- D) Stanton provides concrete examples of women's advances, while Stone considers philosophical and social implications for the future.

11

Based on the passages, Stanton and Stone would most likely agree that

- A) challenging situations should be tolerated only until they can no longer be ignored.
- B) the campaign against slavery was an important cause for women to champion.
- C) social constraints on women are more problematic than political ones.
- D) discontent can prompt meaningful social and political changes.

# Literature

This passage is excerpted from Jane Austen, *Northanger Abbey*, originally published in 1803.

Mrs. Allen was so long in dressing that they did not enter the ballroom till late. As for Mr. Allen, he repaired directly to the card-room. With more care for the safety of her new gown than for the comfort of her protegee, Mrs. Allen made her way through the throng of men by the door, as swiftly as the necessary caution would allow; Catherine, however, kept close at her side, and linked her arm too firmly within her friend's to be torn asunder by any common effort of a struggling assembly. Still they moved on—something better was yet in view; and by a continued exertion of strength and ingenuity they found themselves at last in the passage behind the highest bench. It was a splendid sight, and she began, for the first time that evening, to feel herself at a ball: she longed to dance, but she had not an acquaintance in the room.

Catherine began to feel something of disappointment—she was tired of being continually pressed against by people, the generality of whose faces possessed nothing to interest, and with all of whom she was so wholly unacquainted that she could not relieve the irksomeness of imprisonment by the exchange of a syllable with any of her fellow captives. They saw nothing of Mr. Allen; and after looking about them in vain for a more eligible situation, were obliged to sit down at the end of a table, at which a large party were already placed, without having anything to do there, or anybody to speak to, except each other.

Mrs. Allen congratulated herself, as soon as they were seated, on having preserved her gown from injury. "It would have been very shocking to have it torn," said she, "would not it? It is such a delicate muslin. For my part I have not seen anything I like so well in the whole room, I assure you."

"How uncomfortable it is," whispered Catherine, "not to have a single acquaintance here!"

"Yes, my dear," replied Mrs. Allen, with perfect serenity, "it is very uncomfortable indeed."

"What shall we do? The gentlemen and ladies at this table look as if they wondered why we came here—we seem forcing ourselves into their party."

"Aye, so we do. That is very disagreeable. I wish we had a large acquaintance here."

"I wish we had any—it would be somebody to go to."

"Very true, my dear; and if we knew anybody we would join them directly. The Skinners were here last year—I wish they were here now."

"Had not we better go away as it is? Here are no tea-things for us, you see."

"No more there are, indeed. How very provoking! But I think we had better sit still, for one gets so tumbled in such a crowd! How is my head, my dear? Somebody gave me a push that has hurt it, I am afraid."

"No, indeed, it looks very nice. But, dear Mrs. Allen, are you sure there is nobody you know in all this multitude of people? I think you must know somebody."

"I don't, upon my word—I wish I did. I wish I had a large acquaintance here with all my heart, and then I should get you a partner. I should be so glad to have you dance. There goes a strange-looking woman! What an odd gown she has got on! How old-fashioned it is! Look at the back."

After some time they received an offer of tea from one of their neighbours; it was thankfully accepted, and this introduced a light conversation with the gentleman who offered it, which was the only time that anybody spoke to them during the evening, till they were discovered and joined by Mr. Allen when the dance was over.

"Well, Miss Morland," said he, directly, "I hope you have had an agreeable ball."

"Very agreeable indeed," she replied, vainly endeavouring to hide a great yawn.

"I wish she had been able to dance," said his wife; "I wish we could have got a partner for her. I have been saying how glad I should be if the Skinners were here this winter instead of last; or if the Parrys had come, as they talked of once, she might have danced with George Parry. I am so sorry she has not had a partner!"

"We shall do better another evening I hope," was Mr. Allen's consolation.

# Literature

1

The main purpose of the first paragraph is to

- A) establish the distant relationship between Mr. and Mrs. Allen.
- B) show how claustrophobic and crowded the ballroom is.
- C) describe the main characters' belated arrival at the ball.
- D) introduce the friendship between Catherine and Mrs. Allen.

2

The narrator implies that Catherine

- A) did not have an enjoyable time at the ball.
- B) would rather not have to dance with anyone.
- C) had a fine time at the ball in spite of herself.
- D) does not like keeping the company of Mrs. Allen.

3

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

- A) lines 3–9 (“With . . . assembly”)
- B) lines 12–14 (“It . . . room”)
- C) lines 15–21 (“Catherine . . . captives”)
- D) lines 21–25 (“They . . . other”)

4

In line 11, “ingenuity” most nearly means

- A) brilliance.
- B) dexterity.
- C) inventiveness.
- D) intellect.

5

The description of Mrs. Allen in lines 26–30 primarily serves to

- A) illustrate her unruffled personality.
- B) highlight her scrupulousness.
- C) show her expensive tastes.
- D) establish her sense of vanity.

6

According to the passage, Catherine is “uncomfortable” because

- A) it is too noisy, crowded, and warm.
- B) they do not know anyone at the ball.
- C) they have arrived at the ball very late.
- D) their dresses are at risk of being torn.

7

Which statement best characterizes the relationship between Mrs. Allen and Catherine?

- A) Catherine is irritated by Mrs. Allen but defers to her in conversation
- B) Catherine is amused by Mrs. Allen but is frustrated by her lack of social connections
- C) Catherine is impressed by Mrs. Allen and is interested in her social contacts
- D) Catherine is angered by Mrs. Allen and believes her social tactics are ineffective

8

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

- A) lines 31–34 (“How . . . indeed”)
- B) lines 35–39 (“What . . . here”)
- C) lines 40–43 (“I . . . now”)
- D) lines 50–52 (“But . . . somebody”)

9

As used in line 65, “agreeable” most nearly means

- A) enjoyable.
- B) acceptable.
- C) tolerable.
- D) common.

10

Mrs. Allen’s response in lines 53–55 (“I . . . dance”) mainly serves to

- A) show how shunned they are in the midst of the ball.
- B) highlight her attempts to expand her social circle.
- C) emphasize the goal of finding Catherine a partner.
- D) demonstrate their inability to mingle with new acquaintances.

# Literature

11

The conversation between Mr. Allen and Catherine in lines 64–67 (“Well . . . yawn”) reveals that Catherine is

- A) only being polite to Mr. Allen to conceal her real feelings.
- B) incredibly tired and therefore not paying attention to Mr. Allen.
- C) extremely bored and doesn’t care if Mr. Allen notices it.
- D) offended by Mr. Allen’s question and answers sarcastically.

# Literature

This passage is excerpted from Kate Chopin, "The Awakening," originally published in 1899.

Line "Would you like to hear Mademoiselle Reisz play?" asked Robert, coming out on the porch where she was. Of course Edna would like to hear Mademoiselle Reisz play; but she feared it would be useless to entreat her.

5 "I'll ask her," he said. "I'll tell her that you want to hear her. She likes you. She will come." He turned and hurried away to one of the far cottages, where Mademoiselle Reisz was shuffling away. She was dragging a chair in and out of her room, and at intervals objecting to the crying of a baby, 10 which a nurse in the adjoining cottage was endeavoring to put to sleep. She was a disagreeable little woman, no longer young, who had quarreled with almost every one, owing to a temper which was self-assertive and a disposition to trample upon the rights of others. Robert prevailed upon her without 15 any too great difficulty.

She entered the hall with him during a lull in the dance. She made an awkward, imperious little bow as she went in. She was a homely woman, with a small weazened face and body and eyes that glowed. She had absolutely no taste in 20 dress, and wore a batch of rusty black lace with a bunch of artificial violets pinned to the side of her hair.

"Ask Mrs. Pontellier what she would like to hear me play," she requested of Robert. She sat perfectly still before the piano, not touching the keys, while Robert carried her 25 message to Edna at the window. A general air of surprise and genuine satisfaction fell upon every one as they saw the pianist enter. There was a settling down, and a prevailing air of expectancy everywhere. Edna was a trifle embarrassed at being thus signaled out for the imperious little woman's 30 favor. She would not dare to choose, and begged that Mademoiselle Reisz would please herself in her selections

Edna was what she herself called very fond of music. Musical strains, well rendered, had a way of evoking pictures in her mind. She sometimes liked to sit in the room of 35 mornings when Madame Ratignolle played or practiced. One piece which that lady played Edna had entitled "Solitude." It was a short, plaintive, minor strain. The name of the piece was something else, but she called it "Solitude." When she heard it there came before her imagination the figure of a 40 man standing beside a desolate rock on the seashore. . . His

attitude was one of hopeless resignation as he looked toward a distant bird winging its flight away from him.

Another piece called to her mind a dainty young woman clad in an Empire gown, taking mincing dancing steps as she 45 came down a long avenue between tall hedges. Again, another reminded her of children at play, and still another of nothing on earth but a demure lady stroking a cat.

The very first chords which Mademoiselle Reisz struck upon the piano sent a keen tremor down Mrs. Pontellier's 50 spinal column. It was not the first time she had heard an artist at the piano. Perhaps it was the first time she was ready, perhaps the first time her being was tempered to take an impress of the abiding truth.

She waited for the material pictures which she thought 55 would gather and blaze before her imagination. She waited in vain. She saw no pictures of solitude, of hope, of longing, or of despair. But the very passions themselves were aroused within her soul, swaying it, lashing it, as the waves daily beat upon her splendid body. She trembled, she was choking, and 60 the tears blinded her.

Mademoiselle had finished. She arose, and bowing her stiff, lofty bow, she went away, stopping for neither thanks nor applause. As she passed along the gallery she patted Edna upon the shoulder.

65 "Well, how did you like my music?" she asked. The young woman was unable to answer; she pressed the hand of the pianist convulsively. Mademoiselle Reisz perceived her agitation and even her tears. She patted her again upon the shoulder as she said:

70 "You are the only one worth playing for. Those others? Bah!" and she went shuffling and sidling on down the gallery toward her room.

# Literature

1

- Over the course of the passage, the main focus shifts from
- A) a description of one woman to a detailed characterization of a group of people.
  - B) a depiction of a place to a statement of one character's opinions about that place.
  - C) opinions shared by many laypeople to opinions held by a great artist.
  - D) the setup of a situation to one character's reaction to that situation.

2

- In paragraph 4 (lines 22–28), the words “satisfaction” and “expectancy” serve mainly to
- A) show that those in attendance have fixed ideas about Mademoiselle Reisz's performance.
  - B) characterize Mademoiselle Reisz's feelings about being asked to play for the group.
  - C) indicate that Edna has been waiting for Mademoiselle Reisz to acknowledge her presence.
  - D) demonstrate that the listeners anticipate that Mademoiselle Reisz will not be able to play the pieces well.

3

- The primary purpose of paragraphs 2 and 3 (lines 5–21) is to
- A) characterize Mademoiselle Reisz as someone who delights in making people uncomfortable solely for her own amusement.
  - B) emphasize that Madame Reisz has changed a great deal in the time Edna has known her.
  - C) describe Mademoiselle Reisz's interaction with Robert, which reflects her general interest in social pleasantries.
  - D) establish Mademoiselle Reisz's unpleasant attitude and appearance, which contrast with the beautiful music she makes.

4

- It can be reasonably inferred that Edna refuses to choose the music that Mademoiselle Reisz will play because she
- A) feels that her musical education is insufficient for the honor of making the selection.
  - B) is uncomfortable with being treated differently than the other guests.
  - C) does not know what music the other guests would prefer to hear.
  - D) wants to hear “Solitude” but doesn't know how to ask for it.

5

- Which choice provides the best evidence for the answer to the previous question?
- A) lines 28–30 (“Edna . . . favor”)
  - B) line 32 (“Edna . . . music”)
  - C) lines 34–35 (“She . . . practiced”)
  - D) lines 35–37 (“One . . . strain”)

6

- As used in line 33, “rendered” most nearly means
- A) covered
  - B) made
  - C) provided
  - D) performed

7

- The imagery in paragraph 5 (lines 38–42) mainly serves to
- A) show that Edna's imagination is not influenced by her surroundings.
  - B) demonstrate Edna's inability to distinguish reality from fantasy.
  - C) characterize the vivid scenes music brings to Edna's mind.
  - D) make it clear that Edna longs to be alone in an isolated environment.

# Literature

8

The “dainty young woman clad in an Empire gown” (lines 43–44) is best understood to be

- A) a member of the group.
- B) someone about whom Mademoiselle Ratignolle is singing.
- C) an imaginary woman.
- D) Edna as a child.

9

— It can be reasonably inferred that Mademoiselle Reisz considers Edna to be worth playing for because

- A) only Edna has received enough training to fully appreciate the music.
- B) Edna feels passionately and deeply about the music.
- C) Edna has never had the opportunity to hear her play before.
- D) only Edna understands how it feels to be a musician.

10

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

- A) lines 50–51 (“It was . . . piano”)
- B) lines 54–55 (“She . . . imagination”)
- C) lines 63–64 (“As she . . . shoulder”)
- D) lines 67–68 (“Mademoiselle . . . tears”)

11

The passage suggests that Edna views Mademoiselle Reisz as someone who is

- A) intimidating but profound.
- B) cold and uninviting.
- C) motherly and inspiring.
- D) misguided but irresponsible.

# Literature

This passage is excerpted from L.M. Montgomery, "The Gossip of Valley View," originally published in 1910.

Line It was the first of April, and Julius Barrett, aged fourteen,  
perched on his father's gatepost, watched ruefully the low  
descending sun, and counted that day lost. He had not  
succeeded in "fooling" a single person, although he had tried  
5 repeatedly. One and all, old and young, of his intended  
victims had been too wary for Julius. Hence, Julius was  
disgusted and ready for anything in the way of a stratagem or  
a spoil.

The Barrett gatepost topped the highest hill in Valley  
10 View. Julius could see the entire settlement, from "Young"  
Thomas Everett's farm, a mile to the west, to Adelia  
Williams's weather-grey little house on a moonrise slope to  
the east. He was gazing moodily down the muddy road when  
Dan Chester, homeward bound from the post office, came  
15 riding sloppily along on his grey mare and pulled up by the  
Barrett gate to hand a paper to Julius. Dan was a young man  
who took life and himself very seriously. He seldom smiled,  
never joked, and had a Washingtonian reputation for  
veracity. Dan had never told a conscious falsehood in his life;  
20 he never even exaggerated.

Julius, beholding Dan's solemn face, was seized with a  
perfectly irresistible desire to "fool" him. At the same  
moment his eye caught the dazzling reflection of the setting  
sun on the windows of Adelia Williams's house, and he had  
25 an inspiration little short of diabolical. "Have you heard the  
news, Dan?" he asked.

"No, what is it?" asked Dan.

"I dunno's I ought to tell it," said Julius reflectively. "It's  
kind of a family affair, but then Adelia didn't say not to, and  
30 anyway it'll be all over the place soon. So I'll tell you, Dan, if  
you'll promise never to tell who told you. Adelia Williams  
and Young Thomas Everett are going to be married."

Julius delivered himself of this tremendous lie with a  
transparently earnest countenance. Yet Dan, credulous as he  
35 was, could not believe it all at once.

"Git out," he said.

"It's true, 'pon my word," protested Julius. "Adelia was up  
last night and told Ma all about it. Ma's her cousin, you  
know. The wedding is to be in June, and Adelia asked Ma to  
40 help her get her quilts and things ready."

Julius reeled all this off so glibly that Dan finally believed  
the story, despite the fact that the people thus coupled  
together in prospective matrimony were the very last people  
in Valley View who could have been expected to marry each  
45 other. Young Thomas was a confirmed bachelor of fifty, and  
Adelia Williams was forty; they were not supposed to be  
even well acquainted, as the Everetts and the Williamses had  
never been very friendly, although no open feud existed  
between them.

50 Nevertheless, in view of Julius's circumstantial statements,  
the amazing news must be true, and Dan was instantly agog  
to carry it further. Julius watched Dan and the grey mare out  
of sight, fairly writhing with ecstasy. Oh, but Dan had been  
easy! The story would be all over Valley View in twenty-  
55 four hours. Julius laughed until he came near to falling off  
the gatepost.

At this point Julius and Danny drop out of our story, and  
Young Thomas enters.

It was two days later when Young Thomas heard that he  
60 was to be married to Adelia Williams in June. Eben Clark,  
the blacksmith, told him when he went to the forge to get his  
horse shod. Young Thomas laughed his big jolly laugh.  
Valley View gossip had been marrying him off for the last  
thirty years, although never before to Adelia Williams.

65 "It's news to me," he said tolerantly.

Eben grinned broadly. "Ah, you can't bluff it off like that,  
Tom," he said. "The news came too straight this time. Well, I  
was glad to hear it, although I was mighty surprised. I never  
thought of you and Adelia. But she's a fine little woman and  
70 will make you a capital wife."

Young Thomas grunted and drove away. He had a good  
deal of business to do that day, involving calls at various  
places—the store for molasses, the mill for flour, Jim  
Bentley's for seed grain, the doctor's for toothache drops for  
75 his housekeeper, the post office for mail—and at each and  
every place he was joked about his approaching marriage. In  
the end it rather annoyed Young Thomas. He drove home at  
last in what was for him something of a temper. How on  
earth had that fool story started? With such detailed  
80 circumstantiality of rugs and quilts, too? Adelia Williams  
must be going to marry somebody, and the Valley View  
gossips, unable to locate the man, had guessed Young  
Thomas.

# Literature

1

- Over the course of the passage, the main focus shifts from
- A) a character's attempt at a practical joke to the effect felt by another character.
  - B) a depiction of a small town to the relationships among the characters in the town.
  - C) a character's humorous behavior to the evolution of a story passed around the town.
  - D) a description of a friendship to a discussion of a prank perpetuated by the town.

2

- Which statement best characterizes the relationship between Julius and Dan?
- A) Dan is trusting of Julius and does not question his story about Thomas.
  - B) Dan is skeptical by nature but trusts Julius to always tell him the truth.
  - C) Dan's disposition makes him an attractive target for Julius' plan.
  - D) Dan's attitude towards Julius illustrates an imbalanced friendship.

3

- As used in line 2, the phrase "ruefully" most nearly means
- A) mournfully.
  - B) apologetically.
  - C) repentantly.
  - D) angrily.

4

- As used in line 19, "veracity" most nearly means
- A) candor.
  - B) truthfulness.
  - C) verisimilitude.
  - D) impartiality.

5

- The conversation between Julius and Dan serves mainly to
- A) show how bored Julius is with the inhabitants of Valley View.
  - B) provide a context for the relationships in the community.
  - C) demonstrate Dan's gullibility when it comes to rumors.
  - D) establish why Julius' story was so widely accepted.

6

- Which choice provides the best evidence for the answer to the previous question?
- A) lines 3–5 ("He . . . repeatedly")
  - B) lines 33–34 ("Julius . . . countenance")
  - C) lines 45–49 ("Young Thomas . . . them")
  - D) lines 50–52 ("Nevertheless . . . further")

7

- In the passage, Dan is characterized as someone who is
- A) honest.
  - B) foolish.
  - C) stubborn.
  - D) distrustful.

8

- Which choice provides the best evidence for the answer to the previous question?
- A) lines 16–20 ("Dan . . . exaggerated")
  - B) lines 21–22 ("Julius . . . him")
  - C) lines 34–35 ("Yet . . . once")
  - D) lines 53–54 ("Oh . . . easy")

9

- lines 57–58 ("At . . . enters") serves mainly to
- A) introduce a new character and setting to the story.
  - B) show the resulting impact of the rumor Julius started.
  - C) add a surprising twist to the story.
  - D) create a sense of suspense for the outcome of the prank.

# Literature

10

Eben’s comments in lines 66–70 (“Ah . . . wife”) primarily indicate that he

- A) disagrees strongly with Thomas.
- B) finds the rumor to be funny.
- C) believes that Thomas is lying.
- D) feels unsurprised by the match.

11

It can be inferred that Tom is "in something of a temper" because he

- A) feels exasperated by Julius’ tendency to gossip.
- B) believes Adelia doesn’t want to marry him.
- C) is agitated that he is the subject of a rumor.
- D) has too many errands to run in Valley View.

# Literature

This passage is excerpted from Louisa May Alcott, *Rose in Bloom*, originally published in 1876.

Line Three young men stood together on a wharf one bright  
October day awaiting the arrival of an ocean steamer with  
an impatience which found a vent in lively skirmishes with  
5 a small lad, who pervaded the premises like a will-o'-the-  
wisp and afforded much amusement to the other groups  
assembled there.

"They are the Campbells, waiting for their cousin, who has  
been abroad several years with her uncle, the doctor,"  
whispered one lady to another as the handsomest of the  
10 young men touched his hat to her as he passed, lugging the  
boy, whom he had just rescued from a little expedition down  
among the piles.

"Which is that?" asked the stranger.

"Prince Charlie, as he's called a fine fellow, the most  
15 promising of the seven, but a little fast, people say,"  
answered the first speaker with a shake of the head. "Are the  
others his brothers?"

"No, cousins. The elder is Archie, a most exemplary  
young man. He has just gone into business with the  
20 merchant uncle and bids fair to be an honor to his family.  
The other, with the eyeglasses and no gloves, is Mac, the  
odd one, just out of college."

"And the boy?"

"Oh, he is Jamie, the youngest brother of Archibald, and  
25 the pet of the whole family. Mercy on us he'll be in if they  
don't hold on to him!"

The ladies' chat came to a sudden end just there, for by the  
time Jamie had been fished out of a hogshead, the steamer  
hove in sight and everything else was forgotten. As it swung  
30 slowly around to enter the dock, a boyish voice shouted,  
"There she is! I see her and Uncle and Phebe! Hooray for  
Cousin Rose!" And three small cheers were given with a  
will by Jamie as he stood on a post waving his arms like a  
windmill while his brother held onto the tail of his jacket.

35 Yes, there they were, Uncle Alec swinging his hat like a  
boy, with Phebe smiling and nodding on one side and Rose  
kissing both hands delightedly on the other as she  
recognized familiar faces and heard familiar voices  
welcoming her home.

40 "Bless her dear heart, she's bonnier than ever! Looks  
like a Madonna doesn't she? with that blue cloak round  
her, and her bright hair flying in the wind!" said Charlie  
excitedly as they watched the group upon the deck with  
eager eyes.

45 "Madonnas don't wear hats like that. Rose hasn't  
changed much, but Phebe has. Why, she's a regular  
beauty!" answered Archie, staring with all his might at  
the dark-eyed young woman with the brilliant color and  
glossy black braids shining in the sun.

50 "Dear old Uncle! Doesn't it seem good to have him  
back?" was all Mac said, but he was not looking at "dear  
old uncle" as he made the fervent remark, for he saw  
only the slender blond girl nearby and stretched out his  
hands to meet hers, forgetful of the green water tumbling  
55 between them.

During the confusion that reigned for a moment as the  
steamer settled to her moorings, Rose looked down into  
the four faces upturned to hers and seemed to read in  
them something that both pleased and pained her. It was  
60 only a glance, and her own eyes were full, but through  
the mist of happy tears she received the impression that  
Archie was about the same, that Mac had decidedly  
improved, and that something was amiss with Charlie.  
There was no time for observation, however, for in a  
65 moment the shoreward rush began, and before she could  
grasp her traveling bag, Jamie was clinging to her like an  
ecstatic young bear. She was with difficulty released  
from his embrace to fall into the gentler ones of the elder  
cousins, who took advantage of the general excitement to  
70 welcome both blooming girls with affectionate  
impartiality. Then the wanderers were borne ashore in a  
triumphal procession, while Jamie danced rapturous jigs  
before them even on the gangway.

Archie remained to help his uncle get the luggage  
75 through the Custom House, and the others escorted the  
damsels home. No sooner were they shut up in a  
carriage, however, than a new and curious constraint  
seemed to fall upon the young people, for they realized,  
all at once, that their former playmates were men and  
80 women now.

# Literature

1

Which choice best summarizes the passage?

- A) The passage provides an explanation of relationships within a family.
- B) The passage presents a revelation about children growing older.
- C) The passage captures a conversation regarding reuniting cousins.
- D) The passage describes an anecdote about traveling by ship.

2

Over the course of the passage, the attitude of the cousins shifts from

- A) preoccupation to constraint.
- B) apprehension to embarrassment.
- C) anticipation to reticence.
- D) contemplation to diffidence.

3

Which statement best characterizes the relationship among the reunited cousins?

- A) They are excited to get back to their ordinary lives and friendships.
- B) They have changed too dramatically to find anything in common.
- C) The younger cousins help put the older cousins at ease.
- D) Their growing up has put limitations on their relationships.

4

As used in line 3, “vent” most nearly means

- A) opening.
- B) outlet.
- C) crack.
- D) passage.

5

The conversation between the lady and the stranger in lines 7–26 (“They . . . him”) serves primarily to

- A) show how the town locals tend to gossip about the family.
- B) establish the relationships among the reuniting family.
- C) introduce the traits of the family members who are waiting.
- D) demonstrate the lady's lack of knowledge about the family.

6

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

- A) lines 7–8 (“They . . . doctor”)
- B) lines 14–15 (“Prince . . . say”)
- C) lines 18–20 (“The . . . family”)
- D) lines 24–26 (“Oh . . . him”)

7

Archie’s comments in lines 45–47 (“Madonnas . . . beauty”) primarily indicate that he

- A) disagrees strongly with Charlie.
- B) finds Phebe to be beautiful.
- C) thinks Rose looks like a Madonna.
- D) feels distracted by Rose and Phebe.

8

The description (lines 51–55) that follows Mac's comment in lines 50–51 (“Dear . . . back”) reveals that Mac is

- A) not actually paying attention to his uncle.
- B) unaware of the possibility of falling in the ocean.
- C) more excited to see his uncle than he is to see Rose.
- D) distracted by all the excitement in the crowd.

9

It can be inferred that Rose is “both pleased and pained” when she views her cousins from the ship because she

- A) feels exhausted and confused after a long journey by sea.
- B) believes her cousins don’t recognize her anymore.
- C) senses that her relationship with her cousins has changed.
- D) concludes that her cousins’ lives have gotten better without her.

## Literature

10

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

- A) lines 59-63 ("It ... Charlie")
- B) lines 67-71 ("She ... impartiality")
- C) lines 64-67 ("There ... bear")
- D) lines 76-80 ("No ... now")

11

As used in lines 70-71, the phrase “affectionate impartiality” most nearly means

- A) restraint.
- B) aloofness.
- C) tenderness.
- D) enthusiasm.

# Literature

This passage is excerpted from Jules Verne, *Around the World in Eighty Days*. Originally published in 1873.

The mansion in Saville Row, though not sumptuous, was exceedingly comfortable. The habits of its occupant were such as to demand but little from the sole domestic, but Phileas

Line 5 Fogg required him to be almost superhumanly prompt and regular. On this very 2nd of October he had dismissed James Forster, because that luckless youth had brought him shaving-water at eighty-four degrees Fahrenheit instead of eighty-six; and he was awaiting his successor, who was due at the house between eleven and half-past.

10 Phileas Fogg was seated squarely in his armchair, his feet close together like those of a grenadier on parade, his hands resting on his knees, his body straight, his head erect; he was steadily watching a complicated clock which indicated the hours, the minutes, the seconds, the days, the months, and the

15 years. At exactly half-past eleven Mr. Fogg would, according to his daily habit, quit Saville Row, and repair to the Reform.<sup>1</sup>

A rap at this moment sounded on the door of the cosy apartment where Phileas Fogg was seated, and James Forster, the dismissed servant, appeared.

20 "The new servant," said he.

A young man of thirty advanced and bowed.

"You are a Frenchman, I believe," asked Phileas Fogg, "and your name is John?"

"Jean, if monsieur pleases," replied the newcomer, "Jean

25 Passepartout, a surname which has clung to me because I have a natural aptness for going out of one business into another. I believe I'm honest, monsieur, but, to be outspoken, I've had several trades. I've been an itinerant singer, a circus-rider, when I used to vault like Leotard,<sup>2</sup> and dance on a rope

30 like Blondin.<sup>3</sup> Then I got to be a professor of gymnastics, so as to make better use of my talents; and then I was a sergeant fireman at Paris, and assisted at many a big fire. But I quitted France five years ago, and, wishing to taste the sweets of domestic life, took service as a valet here in England. Finding

35 myself out of place, and hearing that Monsieur Phileas Fogg was the most exact and settled gentleman in the United Kingdom, I have come to monsieur in the hope of living with him a tranquil life, and forgetting even the name of Passepartout."

40 "Passepartout suits me," responded Mr. Fogg. "You are well recommended to me; I hear a good report of you. You know my conditions?"

"Yes, monsieur."

"Good! What time is it?"

45 "Twenty-two minutes after eleven," returned Passepartout, drawing an enormous silver watch from the depths of his pocket.

"You are too slow," said Mr. Fogg.

"Pardon me, monsieur, it is impossible—"

50 "You are four minutes too slow. No matter; it's enough to mention the error. Now from this moment, twenty-nine minutes after eleven, a.m., this Wednesday, 2nd October, you are in my service."

Phileas Fogg got up, took his hat in his left hand, put it on

55 his head with an automatic motion, and went off without a word.

Passepartout heard the street door shut once; it was his new master going out. He heard it shut again; it was his predecessor, James Forster, departing in his turn. Passepartout

60 remained alone in the house in Saville Row.

<sup>1</sup>A private members' club in London

<sup>2</sup>A French acrobat

<sup>3</sup>A French tightrope walker and acrobat

# Literature

1

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

- A) a description of one character to an illustration of that character's interactions with another character.
- B) a characterization of the upper classes to an exposure of problems with the social order.
- C) a depiction of a particular place and time to a prediction about one man's future.
- D) opinions held by an employer to the views asserted by a potential employee.

2

The narrator describes the circumstances under which James Forster was fired most likely in order to

- A) emphasize the standards that Phileas Fogg demands from his employees.
- B) demonstrate the unfairness of Phileas Fogg's methods.
- C) represent social conditions that Phileas Fogg perpetuates.
- D) show Phileas Fogg's random acts of cruelty.

3

In paragraph two (lines 10–16), the narrator characterizes Mr. Fogg as someone who

- A) lacks friends and unwillingly spends most of his time in solitude.
- B) has become jaded and predictable after time spent in the military.
- C) has high standards for both comportment and punctuality.
- D) becomes bored easily because of his lack of interests.

4

As used in line 21, "advanced" most nearly means

- A) promoted.
- B) approached.
- C) loaned.
- D) supported.

5

In the seventh paragraph (lines 33–39), the words "sweets," "settled," and "tranquil" primarily serve to

- A) characterize Passepartout's past.
- B) reveal Passepartout's harsh and manipulative side.
- C) describe Passepartout's approach to all of his career choices.
- D) describe Passepartout's ideal work environment.

6

Mr. Fogg's "conditions" (line 42) can reasonably be inferred to include

- A) the exacting and precise standards he expects of his employees.
- B) his employee's willingness to take on a variety of different jobs.
- C) excellent references from former employers.
- D) a name that he finds suitable.

7

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

- A) lines 3–5 ("Phileas . . . regular")
- B) lines 25–27 ("I . . . another")
- C) lines 40 ("Passepartout . . . me")
- D) lines 40–41 ("You are . . . you")

8

According to the passage, when Mr. Fogg states that Passepartout is "too slow", he is referring to his belief that

- A) Passepartout is not answering his question quickly enough.
- B) Passepartout is not mentally capable of taking the position.
- C) Passepartout's watch is too slow.
- D) Passepartout seems tired and sluggish.

# Literature

9

At the end of the passage, the discussion about the time suggests that Mr. Fogg's attitude towards his new employee will be

- A) strict and harshly unforgiving.
- B) exacting but initially lenient.
- C) pleasant and constantly relaxed.
- D) annoyed but frequently fatherly.

10

In the final two paragraphs (lines 54–60), the description of Mr. Fogg's departure mainly serves to

- A) show that Passepartout already has full control over Fogg's household.
- B) demonstrate Fogg's rudeness towards anyone of a lower class.
- C) highlight the plight of the previous servant.
- D) emphasize the abrupt decision Fogg has made to hire Passepartout.

10

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

- A) lines 48 ("You ... Fogg")
- B) lines 49 ("Pardon ... impossible")
- C) lines 50 ("You ... slow")
- D) lines 50-51 ("No ... error")

# Literature

This passage is adapted from Linda Niehoff, "Like Magic Waiting." ©2015 by Linda Niehoff.

We walked through the field a long time, pushing tall grass out of the way, before we saw anything. I'd pluck ticks out of my hair later and scratch red bumps. I hoped it was worth it.

Line "How much longer?" I asked. I wondered now if it was just  
5 a story Tamara told in her bedroom with the window propped open and flies buzzing everywhere. There were always flies and the sour smell of hog drifting in on dusty Saturday afternoons.

We'd already flipped through shiny magazines and smelled  
10 their thick scent. We'd smeared watermelon polish on our nails for a moment that'd probably never come. Then we rolled the magazines up and slapped at the never-ending flies. Coming out here was the only thing left to do.

"Sometimes it takes a second to find," Tamara said as she  
15 stopped and scanned the field, and I said nothing because I still wanted to believe her.

I turned back around. From here the sagging trailer was the size of a thumbprint. It was hard to believe we'd been crammed inside—it seemed too small to hold us. You could  
20 block it out with a finger and make it disappear.

The late summer sun sank low in the far row of trees and looked like moving globs of light. If I squinted my eyes and let them go all blurry, it glittered just like magic waiting. Or how I pictured magic might look if I could ever find it.

25 "Should we go back?" I asked, right as she pointed.  
"There it is."

At first I couldn't make it out. Weeds and golden grass had pierced the wood and pushed through, making it hard to tell what it had been. I was just about to ask her where when I saw  
30 the face.

Its teeth were bared in an eternal grin. A tiger. Or a lion, maybe. A few feet away lay a camel. And I thought I saw a giraffe, but it was hard to tell. The framework was gone. Probably cut up and sold for firewood a long time ago.

35 "I told you," she said, but I didn't look at her.

I bent down and touched its head, the lion or tiger, and traced my newly painted nail along a red wooden vein. It was a long-ago ribbon or maybe even a rose, now bled of color except for one faint crimson line that clung to its splinters and  
40 wouldn't let go. The wood let out a rotting sigh, and the smell of damp and soil rose up like something whispered.

It looked old. And not just because of the rotting wood. It looked old-fashioned.

"Where'd it come from?" I asked.

45 "Don't know," Tamara said. "It's always been here. Even my mom remembers it from when she was a girl."

"She never rode it?"

Tamara shook her head.

Somebody had carved each eye, each tooth, each wild,  
50 blowing curl and set it out in a farmer's field. Others had stood in line, clutching sweaty coins, just to ride around in circles to the sound of a calliope. Until it wasn't enough anymore. Or maybe there was just too much to keep it standing. Too much sky pressing down, and now it was just  
55 wooden bones.

I wished I could have seen him twirling madly, head lifted high and proud, but there was still a fierceness in his gaze that not even a prison of weeds could hold. Even though the earth was slowly swallowing him, it was like he  
60 wouldn't stop fighting.

I looked up at Tamara, but I could see that she didn't care, not really.

"It's just a pile of wood," she said when she saw how I looked at her.

65 But I wanted to tell her to shut up. This was haunted ground. A whole other world had moved and swallowed and ached unseen under this one with cries and laughter and screams. For a moment, I could almost hear it on the hot breath of wind that brushed my cheek. I strained to listen  
70 before the cicada song rose up and sang it away.

Tamara shrugged and chewed on a nail. She was already peeling off the watermelon polish.

# Literature

1

A main purpose of the passage is to develop a narrative that

- A) entertains the reader by presenting a series of light-hearted, humorous anecdotes.
- B) engages the reader by withholding information to create interest and anticipation.
- C) involves the reader in an intricate mystery that the characters are unable to resolve.
- D) inspires compassion in the reader by portraying a tragic event in the narrator's life.

2

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

- A) recollection of the beginning of a friendship to a portrayal of the current state of that friendship.
- B) narration of an individual's thoughts to a description of a setting.
- C) depiction of a search to a reflection on the object of that search.
- D) discussion of a plan to an account of that plan's failed execution.

3

It can reasonably be inferred that the time the narrator spends with Tamara on Saturdays generally

- A) is largely focused on completing chores.
- B) involves a great deal of routine.
- C) prevents her from being outside.
- D) consists of her listening to Tamara tell stories.

4

Paragraph 6 (lines 21-24) primarily serves to provide a sense of the narrator's

- A) longing for the extraordinary.
- B) respect and appreciation for the natural world.
- C) curiosity about her physical surroundings.
- D) alienation from those around her.

5

When the narrator observes that part of the lion or tiger is "bled of color" in line 38, she most nearly means that the color has

- A) spread over that area.
- B) harmed the wood in that area.
- C) faded from that area.
- D) been deliberately removed from that area.

6

In context, the phrase "Until it wasn't enough anymore" in lines 52-53 most likely refers to which event?

- A) The wooden animals no longer resembled real creatures.
- B) People lost interest in riding on the wooden animals.
- C) The artist stopped creating new wooden figures.
- D) People decided to take apart the frame for firewood.

7

In the passage, the narrator characterizes the lion or tiger as appearing

- A) resolute.
- B) pretentious.
- C) foolish.
- D) resigned.

8

The narrator's reaction to the ruins suggests that she is someone who

- A) engages her imagination when encountering new situations.
- B) finds herself drawn to dangerous environments.
- C) feels reluctant to let others see her emotional responses to events.
- D) exercises caution in expressing her observations.

# Literature

9

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

- A) lines 31–33 (“Its ... tell”)
- B) lines 42–43 (“It ... old-fashioned”)
- C) lines 49–50 (“Somebody ... field”)
- D) lines 66–69 (“A whole ... cheek”)

11

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

- A) lines 14–16 (“Sometimes ... her”)
- B) lines 25–26 (“Should ... is”)
- C) lines 44–46 (“Where'd ... girl”)
- D) lines 63–66 (“It's ... ground”)

10

The interactions between the narrator and Tamara suggest which main difference in their personalities?

- A) Tamara values learning about the past while the narrator is only interested in her present situation.
- B) Tamara prefers to spend time indoors while the narrator prefers to spend time outside.
- C) Tamara is eager to take risks while the narrator prefers activities that are safe.
- D) Tamara is indifferent to her surroundings while the narrator views her surroundings with awe.

# Literature

This passage is adapted from Mark Twain, "Roughing It."  
Originally published in 1872.

My brother had just been appointed Secretary of Nevada Territory—an office of such majesty that it concentrated in itself the duties and dignities of Treasurer, Comptroller, Secretary of State, and Acting Governor in the Governor's absence. A salary of eighteen hundred dollars a year and the title of "Mr. Secretary," gave to the great position an air of wild and imposing grandeur. I was young and ignorant, and I envied my brother. I coveted his distinction and his financial splendor, but particularly and especially the long, strange journey he was going to make, and the curious new world he was going to explore. He was going to travel! I never had been away from home, and that word "travel" had a seductive charm for me. Pretty soon he would be hundreds and hundreds of miles away on the great plains and deserts, and among the mountains of the Far West, and would see buffaloes and Indians, and prairie dogs, and antelopes, and have all kinds of adventures, and have ever such a fine time, and write home and tell us all about it, and be a hero. And he would see the gold mines and the silver mines, and maybe go about of an afternoon when his work was done, and pick up two or three pailfuls of shining slugs, and nuggets of gold and silver on the hillside. And by and by he would become very rich, and return home by sea, and be able to talk as calmly about San Francisco and the ocean, and "the isthmus" as if it was nothing of any consequence to have seen those marvels face to face.

What I suffered in contemplating his happiness, pen cannot describe. And so, when he offered me, in cold blood, the sublime position of private secretary under him, it appeared to me that the heavens and the earth passed away, and the firmament was rolled together as a scroll! I had nothing more to desire. My contentment was complete.

At the end of an hour or two I was ready for the journey. Not much packing up was necessary, because we were going in the overland stage from the Missouri frontier to Nevada, and passengers were only allowed a small quantity of baggage apiece. There was no Pacific railroad in those fine times of ten or twelve years ago—not a single rail of it. I only proposed to stay in Nevada three months—I had no thought of staying longer than that. I meant to see all I could that was new and strange, and then hurry home to business. I

little thought that I would not see the end of that three-month pleasure excursion for six or seven uncommonly long years!

I dreamed all night about Indians, deserts, and silver bars, and in due time, next day, we took shipping at the St. Louis wharf on board a steamboat bound up the Missouri River.

We were six days going from St. Louis to "St. Jo."—a trip that was so dull, and sleepy, and eventless that it has left no more impression on my memory than if its duration had been six minutes instead of that many days. No record is left in my mind, now, concerning it, but a confused jumble of savage-looking snags, which our boat deliberately walked over with one wheel\* or the other; and of reefs which we butted and butted, and then retired from and climbed over in some softer place; and of sand-bars which we roosted on occasionally, and rested, and then got out our crutches and sparred over.

In fact, the boat might almost as well have gone to St. Jo. by land, for she was walking most of the time, anyhow—climbing over reefs and clambering over snags patiently and laboriously all day long. The captain said she was a "bully" boat, and all she wanted was more "shear" and a bigger wheel. I thought she wanted a pair of stilts, but I had the deep sagacity not to say so.

\* The narrator is on a paddle steamer, a boat that uses steam power to turn a large wheel in the rear of the boat.

# Literature

1

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

- A) the narrator's view on his brother's job to the narrator's hopes for his own trip.
- B) the narrator's jealousy of his brother to the narrator's anxiety about his own trip.
- C) the narrator's expectations about the Far West to the reality of life in the Far West.
- D) the narrator's excitement about traveling west to the narrator's fear of leaving home.

2

As used in line 2, "majesty" most nearly means

- A) solemn royalty.
- B) breathtaking beauty.
- C) impressive dignity.
- D) extreme difficulty.

3

Based on lines 7–8, ("I . . . brother") it can reasonably be inferred that the narrator's perspective is one of

- A) critical reflection upon his past views.
- B) objective analysis of his prior actions.
- C) fond recollection of his recent adventures.
- D) regretful remembrance of his past mistakes.

4

Which statement best characterizes the narrator's relationship with his brother?

- A) The narrator is disinterested in emulating his brother.
- B) The narrator is solely motivated by his brother's wealth.
- C) The narrator is generally unrealistic about his brother's situation.
- D) The narrator is mostly critical of his brother's recent decisions.

5

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

- A) lines 1–5 ("My . . . absence")
- B) lines 8–11 ("I . . . explore")
- C) lines 18–22 ("And . . . hillside")
- D) lines 27–28 ("What . . . describe")

6

At the end of the first paragraph, the description of the brother's return mainly serves to

- A) demonstrate that the narrator is correct to be envious of his brother.
- B) call into question the idea that the Far West is a "curious new world."
- C) suggest that the narrator's expectations about the Far West are fantastical.
- D) support the narrator's view of his brother's job with specific examples of its glamour.

7

It can be reasonably inferred from the discussion of Nevada in paragraph 3 (lines 33–43) that the narrator's stay was

- A) less exciting than he had expected.
- B) much longer than he had planned.
- C) more pleasurable than he had anticipated.
- D) more dangerous than he had expected.

8

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

- A) lines 34–37 ("Not . . . apiece")
- B) lines 38–40 ("I only . . . that")
- C) lines 40–41 ("I meant . . . business")
- D) lines 41–43 ("I . . . years")

9

Which situation is most similar to the situation described in paragraph 4 (lines 44–46)?

- A) While paying his bills, a man daydreams about winning money in the lottery.
- B) The night before the school play, a boy worries that he will forget his lines.
- C) On her way to practice, a softball player pictures herself going up to bat.
- D) As he prepares for a diving excursion, a diver imagines finding sunken treasure.

# Literature

10

As used in line 55, “roosted on” most nearly means

- A) made a nest.
- B) lay down to sleep.
- C) settled in a single place.
- D) climbed to the top of.

11

In the description of the boat's movements, the words “walked” and “walking” primarily serve to establish a tone of

- A) humor.
- B) foreboding.
- C) strangeness.
- D) awe.

# Literature

This passage is excerpted from Nathaniel Hawthorne, *The House of the Seven Gables*. Originally published in 1851. In this scene, set in the American Colonies when they were still governed by England, Colonel Pyncheon holds a party at his home for a visiting English dignitary.

One inauspicious circumstance there was, which awakened a hardly concealed displeasure in the breasts of a few of the more punctilious visitors. The founder of this stately mansion—a gentleman noted for the square and ponderous courtesy of his demeanor, ought surely to have stood in his own hall, and to have offered the first welcome to so many eminent personages as here presented themselves in honor of his solemn festival. He was as yet invisible; the most favored of the guests had not beheld him. This sluggishness on Colonel Pyncheon's part became still more unaccountable, when the second dignitary of the province made his appearance, and found no more ceremonious a reception. The lieutenant-governor, although his visit was one of the anticipated glories of the day, had alighted from his horse, and assisted his lady from her side-saddle, and crossed the Colonel's threshold, without other greeting than that of the principal domestic.

This person—a gray-headed man, of quiet and most respectful deportment—found it necessary to explain that his master still remained in his study, or private apartment; on entering which, an hour before, he had expressed a wish on no account to be disturbed.

"Do not you see, fellow," said the high-sheriff of the county, taking the servant aside, "that this is no less a man than the lieutenant-governor? Summon Colonel Pyncheon at once! I know that he received letters from England this morning; and, in the perusal and consideration of them, an hour may have passed away without his noticing it. But he will be ill-pleased, I judge, if you suffer him to neglect the courtesy due to one of our chief rulers, and who may be said to represent King William, in the absence of the governor himself. Call your master instantly."

"Nay, please your worship," answered the man, in much perplexity, but with a backwardness that strikingly indicated the hard and severe character of Colonel Pyncheon's domestic rule; "my master's orders were exceeding strict; and, as your worship knows, he permits of no discretion in

the obedience of those who owe him service. Let who list open yonder door; I dare not, though the governor's own voice should bid me do it!"

"Pooh, pooh, master high sheriff!" cried the lieutenant-governor, who had overheard the foregoing discussion, and felt himself high enough in station to play a little with his dignity. "I will take the matter into my own hands. It is time that the good Colonel came forth to greet his friends; else we shall be apt to suspect that he has taken a sip too much of his Canary wine, in his extreme deliberation which cask it were best to broach in honor of the day! But since he is so much behindhand, I will give him a remembrancer myself!"

Accordingly, with such a tramp of his ponderous riding-boots as might of itself have been audible in the remotest of the seven gables, he advanced to the door, which the servant pointed out, and made its new panels reecho with a loud, free knock. Then, looking round, with a smile, to the spectators, he awaited a response. As none came, however, he knocked again, but with the same unsatisfactory result as at first. And now, being a trifle choleric in his temperament, the lieutenant-governor uplifted the heavy hilt of his sword, wherewith he so beat and banged upon the door, that, as some of the bystanders whispered, the racket might have disturbed the dead. Be that as it might, it seemed to produce no awakening effect on Colonel Pyncheon. When the sound subsided, the silence through the house was deep, dreary, and oppressive, notwithstanding that the tongues of many of the guests had already been loosened by a surreptitious cup or two of wine or spirits.

"Strange, forsooth!—very strange!" cried the lieutenant-governor, whose smile was changed to a frown. "But seeing that our host sets us the good example of forgetting ceremony, I shall likewise throw it aside, and make free to intrude on his privacy."

He tried the door, which yielded to his hand, and was flung wide open by a sudden gust of wind that passed, as with a loud sigh, from the outermost portal through all the passages and apartments of the new house. It rustled the silken garments of the ladies, and waved the long curls of the gentlemen's wigs, and shook the window-hangings and the curtains of the bedchambers; causing everywhere a singular stir, which yet was more like a hush. A shadow of awe and half-fearful anticipation—nobody knew wherefore, nor of what—had all at once fallen over the company.

# Literature

1

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

- A) the unusual behavior of a single character to a general sense of mystery.
- B) the characterization of the party guests to the actions of the host.
- C) a celebration of a certain social class to the denunciation of that class.
- D) a description of a bygone era to a lament for the passing of that era.

2

The narrator implies that the Colonel's behavior is

- A) eccentrically charming.
- B) generally lenient.
- C) unusually withdrawn.
- D) overly servile.

3

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

- A) lines 3–8 (“The founder . . . festival”)
- B) lines 9–13 (“This . . . reception”)
- C) lines 18–22 (“This . . . disturbed”)
- D) lines 36–38 (“my . . . service”)

4

What can reasonably be inferred about the reason for the lieutenant-governor's attitude?

- A) He believes himself to be more valued in the political hierarchy than he actually is.
- B) He is used to being treated with deference because of his position.
- C) He is not intelligent enough to understand what is happening in the house.
- D) The Colonel's absence hurts his feelings, because they are old friends.

5

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

- A) lines 13–17 (“The . . . domestic”)
- B) lines 28–32 (“But . . . himself”)
- C) lines 38–40 (“Let . . . it”)
- D) lines 41–44 (“Pooh . . . dignity”)

6

The actions of the Colonel's servant can best be described as motivated by

- A) his over-eagerness to please the Colonel.
- B) the pretentiousness that his position requires.
- C) his confusion over the high-sheriff's request.
- D) a sense of duty to his employer.

7

According to the passage, what does the high sheriff give as the reason for the Colonel's absence?

- A) He wants to snub the lieutenant-governor.
- B) He has fallen asleep.
- C) He is still reading letters from England.
- D) He has forgotten about the party.

8

The passage's account of the high sheriff's behavior primarily serves to

- A) add depth to a secondary character.
- B) transition from the guests' arrival to the discovery of the Colonel's absence.
- C) accentuate the gravity of the Colonel's absence.
- D) highlight existing class structures at work within the narrative.

9

As used in line 50, “ponderous” most nearly means

- A) oppressive.
- B) heavy.
- C) troublesome.
- D) thoughtful.

# Literature

10

- What is the main purpose of the words “reecho,” “banged,” and “racket,” used in the sixth paragraph (lines 50–61)?
- A) They demonstrate the turmoil caused by the lieutenant-governor.
  - B) They highlight the raucous nature of the Colonel’s party.
  - C) They characterize the lieutenant-governor as a primarily violent man.
  - D) They illustrate the differences between characterizations of the Colonel and the lieutenant-governor.

11

- The lieutenant-governor’s utterance in paragraph seven (lines 67–71) mainly serves to
- A) summarize previous events.
  - B) characterize the Colonel’s attitude.
  - C) introduce a new phase in the story.
  - D) juxtapose the character’s words with his behavior.

# Literature

The following passage is adapted from Patrick Waddington, *The Street That Got Mislaid*, ©Patrick Waddington, 1954.

Marc Girondin had worked in the filing section of the city hall's engineering department for so long that the city was laid out in his mind like a map, full of names and places, intersecting streets and streets that led nowhere, blind alleys and winding lanes.

In all Montreal no one possessed such knowledge; a dozen policemen and taxi drivers together could not rival him. That is not to say that he actually knew the streets whose names he could recite like a series of incantations, for he did little walking. He knew simply of their existence, where they were, and in what relation they stood to others.

But it was enough to make him a specialist. He was undisputed expert of the filing cabinets where all the particulars of all the streets from Abbott to Zotique were indexed, back, forward and across. Those aristocrats, the engineers, the inspectors of water mains and the like, all came to him when they wanted some little particular, some detail, in a hurry. They might despise him as a lowly clerk, but they needed him all the same.

Marc much preferred his office, despite the profound lack of excitement of his work, to his room on Oven Street (running north and south from Sherbrooke East to St. Catherine), where his neighbors were noisy and sometimes violent, and his landlady consistently so. He tried to explain the meaning of his existence once to a fellow tenant, Louis, but without much success. Louis, when he got the drift, was apt to sneer.

"So Craig latches on to Bleury and Bleury gets to be Park, so who cares? Why the excitement?"

"I will show you," said Marc. "Tell me, first, where you live."

"Are you crazy? Here on Oven Street. Where else?"

"How do you know?"

"How do I know? I'm here, ain't I? I pay my rent, don't I? I get my mail here, don't I?"

Marc shook his head patiently.

"None of that is evidence," he said. "You live here on Oven Street because it says so in my filing cabinet at city hall. The post office sends you mail because my card index tells it to. If my cards didn't say so, you wouldn't exist and

Oven Street wouldn't either. That, my friend, is the triumph of bureaucracy."

Louis walked away in disgust. "Try telling that to the landlady," he muttered.

So Marc continued on his undistinguished career, his fortieth birthday came and went without remark, day after day passed uneventfully. A street was renamed, another constructed, a third widened; it all went carefully into the files, back, forward and across.

And then something happened that filled him with amazement, shocked him beyond measure, and made the world of the filing cabinets tremble to their steel bases.

One August afternoon, opening a drawer to its fullest extent, he felt something catch. Exploring farther, he discovered a card stuck at the back between the top and bottom. He drew it out and found it to be an old index card, dirty and torn, but still perfectly decipherable. It was labeled RUE DE LA BOUTEILLE VERTE, or GREEN BOTTLE STREET.

Marc stared at it in wonder. He had never heard of the place or of anything resembling so odd a name. Undoubtedly it had been retitled in some other fashion befitting the modern tendency. He checked the listed details and ruffled confidently through the master file of street names. It was not there. He made another search, careful and protracted, through the cabinets. There was nothing. Absolutely nothing.

Once more he examined the card. There was no mistake. The date of the last regular street inspection was exactly fifteen years, five months and fourteen days ago.

As the awful truth burst upon him, Marc dropped the card in horror, then pounced on it again fearfully, glancing over his shoulder as he did so.

It was a lost, a forgotten street. For fifteen years and more it had existed in the heart of Montreal, not half a mile from city hall, and no one had known. It had simply dropped out of sight, a stone in water.

# Literature

1

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

- A) an explanation of a city's layout to a description of one particular street.
- B) the description of a character's personality to the introduction of a life-changing event.
- C) an interaction between two characters to the effects of that interaction on one of them.
- D) a character's thoughts to the depiction of him acting upon those thoughts.

2

The imagery in lines 2–5 (“city...lanes”) primarily serves to

- A) characterize the mysterious nature of Montreal.
- B) demonstrate the intricacy of Marc's memory.
- C) show that nobody else could understand the map.
- D) emphasize Marc's exceptional sense of direction.

3

The situation described in paragraph two (lines 6–11) is most like

- A) a cook who is an expert on a specific dish but who has never tasted it.
- B) a travel agent who makes a living describing destinations to clients.
- C) a librarian who catalogues and organizes books for the general public.
- D) a student who is interested in a particular artist but never seen any of her work.

4

Which statement best characterizes Marc's relationship with his job?

- A) He enjoys his job but dislikes certain tasks he must perform.
- B) He is good at his job but does not enjoy it.
- C) He is consumed by his job and believes it to be all-important.
- D) He finds his job fun but does not realize how significant his work is.

5

Based on the passage, the other workers in the engineering department view Marc as

- A) valuable but looked-down-upon.
- B) intelligent but underused.
- C) superior but shy.
- D) inferior but quick.

6

It can be reasonably inferred that Marc and Louis differ primarily because

- A) Marc is poetic and Louis is unimaginative.
- B) Marc is delusional and Louis is realistic.
- C) Marc is productive and Louis is lazy.
- D) Marc is kind and Louis is brusque.

7

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

- A) lines 34–37 (“How . . . said”)
- B) lines 37–39 (“You . . . hall”)
- C) lines 39–40 (“The post . . . to”)
- D) lines 40–44 (“If . . . muttered”)

8

— As used in line 54, “exploring” most nearly means

- A) traveling.
- B) inquiring.
- C) examining.
- D) evaluating.

9

At the end of the passage, the narrator implies that Marc is

- A) confused as to why he forgot to file a particular street.
- B) curious about what the street contains.
- C) anxious about the quality of the street inspections.
- D) terrified by the discovery he has made.

# Literature

10

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

- A) lines 64–66 (“It . . . nothing”)
- B) lines 68–69 (“The date . . . ago”)
- C) lines 70–72 (“As . . . so”)
- D) line 73 (“It . . . street”)

11

lines 73–76 (“It was . . . water”) mainly serve to

- A) highlight the importance of a character’s discovery.
- B) illustrate the main character’s unusual point of view.
- C) describe a journey taken by the main character.
- D) depict a new setting that a character will explore.

# Literature

This passage is excerpted from Charlotte Bronte, *Villette*. Originally published in 1853. In this chapter, the narrator and her host, Mrs. Bretton, are trying to occupy a young girl, Paulina, who is staying with them.

One afternoon, Mrs. Bretton, coaxing [Paulina] from her usual station in a corner, had lifted her into the window-seat, and, by way of occupying her attention, told her to watch the passengers and count how many ladies should go down the street in a given time. She had sat listlessly, hardly looking, and not counting, when—my eye being fixed on hers—I witnessed in its iris and pupil a startling transfiguration. These sudden, dangerous natures—*sensitive* as they are called—offer many a curious spectacle to those whom a cooler temperament has secured from participation in their angular vagaries. The fixed and heavy gaze swum, trembled, then glittered in fire; the small, overcast brow cleared; the trivial and dejected features lit up; the sad countenance vanished, and in its place appeared a sudden eagerness, an intense expectancy. "It *is*!" were her words.

Like a bird or a shaft, or any other swift thing, she was gone from the room. How she got the house-door open I cannot tell; probably it might be ajar; perhaps Warren was in the way and obeyed her behest, which would be impetuous enough. I—watching calmly from the window—saw her, in her black frock and tiny braided apron (to pinafores she had an antipathy), darthalf the length of the street; and, as I was on the point of turning, and quietly announcing to Mrs. Bretton that the child was run out mad, and ought instantly to be pursued, I saw her caught up, and rapt at once from my cool observation, and from the wondering stare of the passengers. A gentleman had done this good turn, and now, covering her with his cloak, advanced to restore her to the house whence he had seen her issue.

I concluded he would leave her in a servant's charge and withdraw; but he entered: having tarried a little while below, he came up-stairs.

His reception immediately explained that he was known to Mrs. Bretton. She recognised him; she greeted him, and yet she was fluttered, surprised, taken unawares. Her look and manner were even expostulatory; and in reply to these, rather than her words, he said,—"I could not help it, madam: I found it impossible to leave the country without seeing with my own eyes how she settled."

"But you will unsettle her."

"I hope not. And how is papa's little Polly?"

This question he addressed to Paulina, as he sat down and placed her gently on the ground before him.

"How is Polly's papa?" was the reply, as she leaned on his knee, and gazed up into his face.

It was not a noisy, not a wordy scene: for that I was thankful; but it was a scene of feeling too brimful, and which, because the cup did not foam up high or furiously overflow, only oppressed one the more. On all occasions of vehement, unrestrained expansion, a sense of disdain or ridicule comes to the weary spectator's relief; whereas I have ever felt most burdensome that sort of sensibility which bends of its own will, a giant slave under the sway of good sense.

Mr. Home was a stern-featured—perhaps I should rather say, a hard-featured man: his forehead was knotty, and his cheekbones were marked and prominent. The character of his face was quite Scotch; but there was feeling in his eye, and emotion in his now agitated countenance. His northern accent in speaking harmonised with his physiognomy. He was at once proud-looking and homely-looking. He laid his hand on the child's uplifted head. She said—"Kiss Polly."

He kissed her. I wished she would utter some hysterical cry, so that I might get relief and be at ease. She made wonderfully little noise: she seemed to have got what she wanted—all she wanted, and to be in a trance of content. Neither in mien nor in features was this creature like her sire, and yet she was of his strain: her mind had been filled from his, as the cup from the flagon.

# Literature

1

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

- A) a critique of the treatment of children to a depiction of a particular child's situation.
- B) observations of a character's mental state to a domestic reunion.
- C) the opinions stated by one character to the opposing views asserted by another.
- D) the description of a character's past to a prediction about the character's future.

2

In the passage, the narrator characterizes Paulina as someone who goes from

- A) dissatisfied to content.
- B) confused to understanding.
- C) angry to experiencing catharsis.
- D) contented to ecstatic.

3

In the first paragraph, the words "swum," "trembled," and "glittered" primarily serve to

- A) describe the atmosphere Mr. Home's presence creates in the room.
- B) reveal that Paulina has become upset by what she has seen.
- C) emphasize Paulina's excitement at what she has seen.
- D) characterize the effect Paulina's boredom has had on her appearance.

4

According to the passage, Paulina cries, "It is!" (line 15) because

- A) she is trying to entertain herself.
- B) she perceives the narrator's gaze as a challenge.
- C) she has made a mistake she refuses to recognize.
- D) she has recognized her father on the street.

5

In lines 16–17, the description of Paulina's disappearance mainly serves to

- A) show a physical response from Paulina that parallels her emotional response.
- B) demonstrate how the narrator's reaction to the scene outside affects Paulina.
- C) show the lack of security in the household and why it is not suitable for Paulina.
- D) highlight Paulina's excitable and easily dissatisfied nature.

6

As used in line 22, "dart" most nearly means

- A) sew.
- B) shoot.
- C) panic.
- D) run.

7

Based on the narrator's initial reaction to Mr. Home, it can be reasonably inferred that the narrator assumes Mr. Home is

- A) Paulina's father.
- B) an acquaintance of Mrs. Bretton.
- C) a stranger.
- D) a servant named Warren

8

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

- A) lines 18–20 ("Perhaps . . . enough")
- B) lines 30–31 ("I . . . withdraw")
- C) lines 33–34 ("His . . . Mrs. Bretton")
- D) lines 44–45 ("How . . . face")

# Literature

9

— Based on the description of Mr. Home’s encounter with Mrs. Bretton, it can reasonably be inferred that

- A) Mrs. Bretton has attempted to prevent Mr. Home from seeing Paulina.
- B) Mr. Home feels comfortable enough with Mrs. Bretton to address her by a nickname.
- C) Mr. Home has come for a regularly-scheduled visit with Paulina.
- D) Mrs. Bretton was not expecting to see Mr. Home.

11

The description of Mr. Home in paragraph 10 (lines 54–61) primarily serves to

- A) demonstrate the duality of his character.
- B) emphasize his hard, cold nature.
- C) show the strong and obvious love he has for Paulina.
- D) reinforce his state of confusion.

10

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

- A) lines 34–35 (“She . . . unawares”)
- B) lines 35–36 (“Her . . . expostulatory”)
- C) line 40 (“But . . . her”)
- D) line 41 (“And . . . Polly”)

# Literature

This passage is adapted from Sir Arthur Conan Doyle, *The Adventures of Sherlock Holmes*. Originally published in 1892. The narrator, Dr. Watson, works closely with detective Sherlock Holmes.

The portly client puffed out his chest with an appearance of some little pride and pulled a dirty and wrinkled newspaper from the inside pocket of his greatcoat. As he glanced down the advertisement column, with his head thrust forward and the paper flattened out upon his knee, I took a good look at the man and endeavoured, after the fashion of my companion, to read the indications which might be presented by his dress or appearance.

I did not gain very much, however, by my inspection. Our visitor bore every mark of being an average commonplace British tradesman, obese, pompous, and slow. He wore rather baggy grey shepherd's check trousers, a not over-clean black frock-coat, unbuttoned in the front, and a drab waistcoat with a heavy brassy Albert chain, and a square pierced bit of metal dangling down as an ornament. A frayed top-hat and a faded brown overcoat with a wrinkled velvet collar lay upon a chair beside him. Altogether, look as I would, there was nothing remarkable about the man save his blazing red head, and the expression of extreme chagrin and discontent upon his features.

Sherlock Holmes' quick eye took in my occupation, and he shook his head with a smile as he noticed my questioning glances. "Beyond the obvious facts that he has at some time done manual labour, that he is a Freemason, that he has been in China, and that he has done a considerable amount of writing lately, I can deduce nothing else."

Mr. Jabez Wilson started up in his chair, with his forefinger upon the paper, but his eyes upon my companion.

"How, in the name of good-fortune, did you know all that, Mr. Holmes?" he asked. "How did you know, for example, that I did manual labour? It's as true as gospel, for I began as a ship's carpenter."

"Your hands, my dear sir. Your right hand is quite a size larger than your left. You have worked with it, and the muscles are more developed."

"Well, then, and the Freemasonry?"

"I won't insult your intelligence by telling you how I read that, especially as, rather against the strict rules of your order, you use an arc-and-compass breastpin."

40 "Ah, of course, I forgot that. But the writing?"

"What else can be indicated by that right cuff so very shiny for five inches, and the left one with the smooth patch near the elbow where you rest it upon the desk?"

"Well, but China?"

45 "The fish that you have tattooed immediately above your right wrist could only have been done in China. I have made a small study of tattoo marks and have even contributed to the literature of the subject. That trick of staining the fishes' scales of a delicate pink is quite peculiar to China. When, in addition, I see a Chinese coin hanging from your watch-chain, the matter becomes even more simple."

Mr. Jabez Wilson laughed heavily. "Well, I never!" said he. "I thought at first that you had done something clever, but I see that there was nothing in it after all."

55 "I begin to think, Watson," said Holmes, "that I make a mistake in explaining. 'Omne ignotum pro magnifico,'\* you know, and my poor little reputation, such as it is, will suffer shipwreck if I am so candid. Can you not find the advertisement, Mr. Wilson?"

60 "Yes, I have got it now," he answered with his thick red finger planted halfway down the column. "Here it is. This is what began it all. You just read it for yourself, sir."

\* Roughly translated as "Everything unknown is/seems magnificent."

# Literature

1

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

- A) an abstract description provided by the narrator to a concrete description provided by the client.
- B) a detailed study of Sherlock Holmes to an outsider's study of his client.
- C) the description of a character's outer appearance to a description of his inner beliefs.
- D) the introduction of one character to the revelation of another character's astute observations.

2

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

- A) construction.
- B) appearance.
- C) manner.
- D) clothing.

3

The main purpose of the second paragraph is to

- A) show that the client is less important than other clients who visit the office.
- B) prove that the narrator is inherently biased against the client.
- C) demonstrate that the narrator is mistaken in his view of the world.
- D) present the narrator's assessment of the client based on his appearance.

4

By the end of the passage, the client views Holmes's deductions as

- A) unimpressive.
- B) intriguing.
- C) astonishing.
- D) insulting.

5

The passage implies that Holmes knows that Watson

- A) has been trying to make his own inferences about the client.
- B) recognizes the client from a previous meeting.
- C) cannot understand why the client has chosen to come to them.
- D) understands the client better than Holmes does.

6

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

- A) lines 15-17 ("A frayed ... him")
- B) lines 17-20 ("Altogether ... features")
- C) lines 21-23 ("Sherlock ... glances")
- D) lines 23-26 ("Beyond ... else")

7

In lines 47-48, the words "study," and "literature" primarily serve to

- A) demonstrate the depth of Holmes's knowledge on an obscure topic.
- B) provide a false sense of authority to Holmes's deductions.
- C) lure the client into giving more information than he intended to.
- D) prove that Holmes feels that he is intellectually superior to Watson.

8

According to the passage, Holmes deduces that the client received his tattoo in China because

- A) the client has said that he has spent time in China.
- B) the tattoo is the Chinese symbol for the Freemasons.
- C) Holmes wrote a book about the type of fish depicted in the tattoo.
- D) the coloring technique used in the tattoo is unique to China.

# Literature

9

- Sherlock Holmes's deductions about the client serve to
- A) introduce the client ironically to set the tone for the rest of the passage.
  - B) characterize Holmes as unusually perceptive and knowledgeable.
  - C) show the extent of Watson's errors to establish him as incapable.
  - D) highlights the difference in social class between the detective and the client.

10

- It can be reasonably inferred that, after hearing Homes explain his observations, the client
- A) will tell people that Holmes is a fraud.
  - B) no longer thinks that it is necessary to hire a detective for the case.
  - C) has a less romantic notion of Holmes's abilities.
  - D) now considers Watson more intelligent than Holmes.

11

- Which choice provides the best evidence for the answer to the previous question?
- A) lines 52-54 ("Mr. Jabez ... all")
  - B) lines 55-56 ("I ... explaining")
  - C) lines 57-58 ("My poor ... candid")
  - D) lines 58-59 ("Can ... Wilson")

# Literature

This passage is excerpted from Edith Wharton, *House of Mirth*, originally published in 1905.

Selden paused in surprise. In the afternoon rush of the Grand Central Station his eyes had been refreshed by the sight of Miss Lily Bart.

Line It was a Monday in early September, and he was returning  
5 to his work from a hurried dip into the country; but what was Miss Bart doing in town at that season? Her desultory air perplexed him. She stood apart from the crowd, letting it drift by her to the platform or the street, and wearing an air of irresolution which might, as he surmised, be the mask of a  
10 very definite purpose. It struck him at once that she was waiting for someone, but he hardly knew why the idea arrested him. There was nothing new about Lily Bart, yet he could never see her without a faint movement of interest: it was characteristic of her that she always roused speculation,  
15 that her simplest acts seemed the result of far-reaching intentions.

An impulse of curiosity made him turn out of his direct line to the door, and stroll past her. He knew that if she did not wish to be seen she would contrive to elude him; and it  
20 amused him to think of putting her skill to the test. "Mr. Selden—what good luck!"

She came forward smiling, eager almost, in her resolve to intercept him. One or two persons, in brushing past them, lingered to look; for Miss Bart was a figure to arrest even the  
25 suburban traveller rushing to his last train.

Selden had never seen her more radiant. Her vivid head, relieved against the dull tints of the crowd, made her more conspicuous than in a ball-room, and under her dark hat and veil she regained the girlish smoothness, the purity of tint,  
30 that she was beginning to lose after eleven years of late hours and indefatigable dancing.

"What luck!" she repeated. "How nice of you to come to my rescue!"

He responded joyfully that to do so was his mission in  
35 life, and asked what form the rescue was to take.

"Oh, almost any—even to sitting on a bench and talking to me. One sits out a cotillion—why not sit out a train? It isn't a bit hotter here than in Mrs. Van Osburgh's conservatory—and some of the women are not a bit uglier." She broke off,  
40 laughing, to explain that she had come up to town from

Tuxedo, on her way to the Gus Trenors' at Bellomont, and had missed the three-fifteen train to Rhinebeck. "And there isn't another till half-past five." She consulted the little jewelled watch among her laces. "Just two hours to wait. And

45 I don't know what to do with myself. My maid came up this morning to do some shopping for me, and was to go on to Bellomont at one o'clock, and my aunt's house is closed, and I don't know a soul in town." She glanced plaintively about the station. "It IS hotter than Mrs. Van Osburgh's, after all. If  
50 you can spare the time, do take me somewhere for a breath of air."

He declared himself entirely at her disposal: the adventure struck him as diverting. As a spectator, he had always enjoyed Lily Bart; and his course lay so far out of her orbit  
55 that it amused him to be drawn for a moment into the sudden intimacy which her proposal implied.

"Shall we go over to Sherry's for a cup of tea?"

She smiled assentingly, and then made a slight grimace.

"So many people come up to town on a Monday—one is  
60 sure to meet a lot of bores. I'm as old as the hills, of course, and it ought not to make any difference; but if I'M old enough, you're not," she objected gaily. "I'm dying for tea—but isn't there a quieter place?"

He answered her smile, which rested on him vividly. Her  
65 discretions interested him almost as much as her imprudences: he was so sure that both were part of the same carefully-elaborated plan. In judging Miss Bart, he had always made use of the "argument from design."

# Literature

1

Which choice best summarizes the passage?

- A) The passage presents a portrait of two characters who decide to travel together
- B) The passage explains the reasons for one character's avoidance of a community
- C) The passage captures one character's fascination with another character
- D) The passage describes a busy train station and the characters who inhabit it

2

Over the course of the passage, Selden's attitude shifts from

- A) bewildered to curious.
- B) dismayed to apprehensive.
- C) amazed to anticipatory.
- D) incredulous to indifferent.

3

Which statement best characterizes the relationship between Selden and Lily?

- A) Selden is skeptical of Lily and thinks she is hiding something from him
- B) Selden is captivated by Lily and wants to spend more time with her
- C) Selden is alarmed by Lily's behavior and strains to understand her
- D) Selden is smitten with Lily and begins to fall in love with her

4

In the passage, Lily is characterized as someone who is

- A) intriguing and deliberate.
- B) irritable and anxious.
- C) surprising and irreverent.
- D) secretive and moody.

5

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

- A) lines 7–10 (“She . . . purpose”)
- B) lines 10–12 (“It . . . him”)
- C) lines 12–16 (“There . . . intentions”)
- D) lines 18–20 (He . . . test”)

6

As used in line 23, “intercept” most nearly means

- A) halt.
- B) deflect.
- C) overhear.
- D) possess.

7

As used in line 26, “vivid” most nearly means

- A) bright.
- B) animated.
- C) clear.
- D) sharp.

8

The conversation between Selden and Lily in lines 32–39 (“What . . . uglier”) serves primarily to

- A) show how long it has been since they last saw each other.
- B) demonstrate their shared experiences.
- C) introduce them as potential romantic partners.
- D) establish the imbalance of power between them.

9

It can be inferred that Lily does not want to go to Sherry's because she

- A) thinks she will not find the company there engaging.
- B) is worried she won't make it to her destination on time.
- C) is sure that it will be too hot and crowded to enjoy.
- D) believes she is too old to enjoy the atmosphere.

10

Selden's observations of Lily primarily indicate that he

- A) is cautiously wary of Lily's actions.
- B) is pleased to be in Lily's company.
- C) thinks that Lily can be a manipulative person.
- D) feels drawn to Lily in spite of himself.

# Literature

11

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

- A) lines 52–53 (“He . . . diverting”)
- B) lines 54–56 (“and . . . implied”)
- C) line 58 (“She . . . grimace”)
- D) line 64 (“He . . . vividly”)

# Literature

This passage is excerpted from Jack London, *The Scarlet Plague*. Originally published in 1915.

Line An old man and a boy travelled along this runway. They  
5 moved slowly, for the old man was very old, his movements  
tremulous, and he leaned heavily upon his staff. A rude skull-  
cap of goat-skin protected his head from the sun. From  
beneath this fell a scant fringe of stained and dirty-white hair.  
A visor, ingeniously made from a large leaf, shielded his  
eyes, and from under this he peered at the way of his feet on  
the trail. His beard, which should have been snow-white but  
which showed the same weather-wear and camp-stain as his  
10 hair, fell nearly to his waist in a great tangled mass. About his  
chest and shoulders hung a single, mangy garment of  
goat-skin. His arms and legs, withered and skinny, betokened  
extreme age, as well as did their sunburn and scars and  
scratches betoken long years of exposure to the elements.  
15 The boy, who led the way, checking the eagerness of his  
muscles to the slow progress of the elder, likewise wore a  
single garment—a ragged-edged piece of bear-skin, with a  
hole in the middle through which he had thrust his head. He  
could not have been more than twelve years old. Tucked  
20 coquettishly over one ear was the freshly severed tail of a  
pig. In one hand he carried a medium-sized bow and an  
arrow.  
On his back was a quiverful of arrows. From a sheath  
hanging about his neck on a thong, projected the battered  
25 handle of a hunting knife. He was as brown as a berry, and  
walked softly, with almost a catlike tread. In marked contrast  
with his sunburned skin were his eyes—blue, deep blue, but  
keen and sharp as a pair of gimlets. They seemed to bore into  
aft about him in a way that was habitual. As he went along he  
30 smelled things, as well, his distended, quivering nostrils  
carrying to his brain an endless series of messages from the  
outside world. Also, his hearing was acute, and had been so  
trained that it operated automatically. Without conscious  
effort, he heard all the slight sounds in the apparent  
35 quiet—heard, and differentiated, and classified these  
sounds—whether they were of the wind rustling the leaves,  
of the humming of bees and gnats, of the distant rumble of  
the sea that drifted to him only in lulls, or of the gopher, just  
under his foot, shoving a pouchful of earth into the entrance  
40 of his hole.

Suddenly he became alertly tense. Sound, sight, and odor  
had given him a simultaneous warning. His hand went back  
to the old man, touching him, and the pair stood still. Ahead,  
at one side of the top of the embankment, arose a crackling  
45 sound, and the boy's gaze was fixed on the tops of the  
agitated bushes. Then a large bear, a grizzly, crashed into  
view, and likewise stopped abruptly, at sight of the humans.  
He did not like them, and growled querulously. Slowly the  
boy fitted the arrow to the bow, and slowly he pulled the  
50 bowstring taut. But he never removed his eyes from the bear.  
The old man peered from under his green leaf at the  
danger, and stood as quietly as the boy. For a few seconds  
this mutual scrutinizing went on; then, the bear betraying a  
growing irritability, the boy, with a movement of his head,  
55 indicated that the old man must step aside from the trail and  
go down the embankment. The boy followed, going  
backward, still holding the bow taut and ready. They waited  
till a crashing among the bushes from the opposite side of  
the embankment told them the bear had gone on. The boy  
60 grinned as he led back to the trail.  
"A big un, Granser," he chuckled.  
The old man shook his head.  
"They get thicker every day," he complained in a thin,  
undependable falsetto. "Who'd have thought I'd live to see  
65 the time when a man would be afraid of his life on the way to  
the Cliff House. When I was a boy, Edwin, men and women  
and little babies used to come out here from San Francisco by  
tens of thousands on a nice day. And there weren't any bears  
then. No, sir. They used to pay money to look at them in  
70 cages, they were that rare."  
"What is money, Granser?"  
Before the old man could answer, the boy recollected and  
triumphantly shoved his hand into a pouch under his bear-  
skin and pulled forth a battered and tarnished silver dollar.  
75 The old man's eyes glistened, as he held the coin close to  
them.  
"I can't see," he muttered. "You look and see if you can  
make out the date, Edwin."  
The boy laughed.  
80 "You're a great Granser," he cried delightedly, "always  
making believe them little marks mean something."

# Literature

1

- Over the course of the passage, the main focus shifts from
- A) an appreciative characterization of the wilderness to a critique of civilization.
  - B) the depiction of a particular place and time to a broad prediction about the future.
  - C) a physical description of characters and their environment to a discussion of one character's memories.
  - D) the opinions held by a young character to the views asserted by an older character.

2

- The narrator characterizes Edwin as someone who
- A) has never known a different way of life.
  - B) does not respect his elders.
  - C) has just begun to develop survival skills.
  - D) refuses education in any form.

3

- According to the passage, Edwin's sensory skills are
- A) highly developed and give him a precise awareness of the environs.
  - B) finely tuned but fail to protect Edwin from imminent dangers.
  - C) equally as proficient as Granser's sensory abilities.
  - D) solely responsible for Edwin and Granser's continued safety.

4

- In lines 8–10, the description of the beard mainly serves to
- A) demonstrate that Granser is negligent.
  - B) emphasize Granser's advanced age.
  - C) highlight Granser's concern about appearances.
  - D) show that Granser intimidates others.

5

- In paragraph 3 (lines 26–32), the words “catlike,” “keen,” and “acute” primarily serve to
- A) describe the way Edwin relates to animals.
  - B) characterize Edwin's interaction with his surroundings.
  - C) describe Edwin's innate personality traits.
  - D) reveal Edwin's superiority to Granser.

6

- As used in line 45, “fixed on” most nearly means
- A) attached to.
  - B) locked on.
  - C) established on.
  - D) secured to.

7

- Based on the description of the encounter with the bear, it can reasonably be inferred that
- A) Granser and Edwin have previously come across bears on their journey.
  - B) Granser and Edwin are not concerned by the presence of animals in the forest.
  - C) Granser is surprised to see a bear that is not in a cage.
  - D) Edwin is distracted by the constant threat posed by wildlife.

8

- Which choice provides the best evidence for the answer to the previous question?
- A) lines 41–42 (“Sound . . . warning”)
  - B) line 48 (“He . . . querulously”)
  - C) line 61 (“A . . . chuckled”)
  - D) lines 63–64 (“They . . . falsetto”)

9

- It can reasonably be inferred from Edwin and Granser's conversation that
- A) citizens have recently become aware of changes in their environment.
  - B) the social changes Granser refers to are his own imaginary inventions.
  - C) society underwent a drastic change relatively early in Granser's life.
  - D) Edwin and Granser have made a deliberate choice to leave society.

# Literature

10

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

- A) lines 64–66 (“Who’d . . . House”)
- B) lines 66–68 (“When . . . day”)
- C) lines 72–74 (“Before . . . dollar”)
- D) line 77 (“I . . . muttered”)

11

Edwin’s reaction to the date on the coin primarily serves to

- A) demonstrate Edwin’s lack of intelligence.
- B) represent a belief that is rapidly becoming common.
- C) show that Edwin does not trust Granser.
- D) emphasize the extent to which social practices have changed.

# Literature

This passage is excerpted from J.D. Beresford, *The Looking Glass*. Originally published in 1921.

This was the first communication that had come from her aunt in Rachel's lifetime.

Line "I think your aunt has forgiven me at last," her father said as he passed the letter across the table.

5 Rachel looked first at the signature. It seemed strange to see her own name there. It was as if her individuality, her very identity, was impugned by the fact that there should be two Rachel Deanes. Moreover there was a likeness between her aunt's autograph and her own, a characteristic turn in the  
10 looping of the letters, a hint of the same decisiveness and precision. If Rachel had been educated fifty years earlier, she might have written her name in just that manner.

"You're very like her in some ways," her father said, as she still stared at the signature.

15 Rachel's eyelids drooped and her expression indicated a faint, suppressed intolerance of her father's remark. He said the same things so often, and in so precisely the same tone, that she had formed a habit of automatically rejecting the truth of certain of his statements. He had always appeared to  
20 her as senile. He had been over fifty when she was born, and ever since she could remember she had doubted the correctness of his information. She was, she had often told herself, "a born sceptic; an ultra-modern." She had a certain veneration for the more distant past, but none for her father's  
25 period. She had long since condemned alike the ethic and the aesthetic of the nineteenth century as represented by her father's opinions; so that, even now, when his familiar comment coincided so queerly with her own thought, she instinctively disbelieved him. Yet, as always, she was gentle  
30 in her answer. She condescended from the heights of her youth and vigour to pity him.

"I should think you must almost have forgotten what Aunt Rachel was like, dear," she said. "How many years is it since you've seen her?"

35 "More than forty," her father said, ruminating profoundly. "We disagreed, we invariably disagreed. Rachel always prided herself on being so modern. She read Darwin and things like that. Altogether beyond me, I admit. Still, it seems to me that the old truths have endured, and will, in spite of  
40 all--in spite of all."

Rachel straightened her shoulders and lifted her head; there was disdain in her face, but none in her voice as she replied: "And so it seems that she wants to see me."

She was excited at the thought of meeting this traditional,  
45 almost mythical aunt whom she had so often heard about. Sometimes she had wondered if the personality of this remarkable relative had not been a figment of her father's imagination, long pondered, and reconstructed out of half-forgotten material. But this letter of hers that now lay on the  
50 breakfast table was admirable in character. There was something of condescension and intolerance expressed in the very restraint of its tone. She had written a kindly letter, but the kindness had an air of pity. It was all consistent enough with what her father had told her.

55 Mr. Deane came out of his reminiscences with a sigh.

"Yes, yes; she wants to see you, my dear," he said. "I think you had better accept this invitation to stay with her. She is rich, almost wealthy; and I, as you know, have practically nothing to leave you—practically nothing. If she  
60 took a fancy to you..."

He sighed again, and Rachel knew that for the hundredth time he was regretting his own past weakness. He had been so foolish in money matters, frittering away his once considerable capital in aimless speculations.

65 "I'll certainly go, if you can spare me for a whole fortnight," Rachel said. "I'm all curiosity to see this remarkable aunt. By the way, how old is she?"

"There were only fifteen months between us," Mr. Deane said, "so she must be,—dear me, yes;—she must be seventy-  
70 three. Dear, dear. Fancy Rachel being seventy-three! I always think of her as being about your age. It seems so absurd to think of her as *old*..."

He continued his reflections, but Rachel was not listening. He was asking for the understanding of the young; quite  
75 unaware of his senility, reaching out over half a century to try to touch the comprehension and sympathy of his daughter. But she was already bent on her own adventure, looking forward eagerly to a visit to London that promised delights other than the inspection of the mysterious,  
80 traditional aunt whom she had so long known by report.

# Literature

1

- Over the course of the passage, the main focus shifts from
- A) a depiction of a family's strained dynamic to a character's wandering recollections of the distant past.
  - B) one character's reception of new information to a frank discussion of money and inheritances.
  - C) two characters' reactions to an unexpected message to a character's anticipation of a journey.
  - D) a comparison between two characters to one character's thoughts about memories and aging.

2

- Which statement best describes Rachel's perspective regarding her aunt?
- A) She is curious about her similarities to her aunt and intrigued by the idea of meeting her.
  - B) She is disdainful of her aunt because she has ignored her family for years.
  - C) She is suspicious of her aunt's intentions but excited about the possibility of an inheritance.
  - D) She is puzzled by her aunt's sudden interest in meeting her.

3

- In line 7, "impugned" most nearly means
- A) contradicted.
  - B) challenged.
  - C) opposed.
  - D) resisted.

4

- The narrator implies that Rachel's attitude towards her father is
- A) overtly disrespectful.
  - B) generally loving.
  - C) mildly contemptuous.
  - D) wholly patronizing.

5

- Which choice provides the best evidence for the answer to the previous question?
- A) lines 15–16 ("Rachel's . . . remark")
  - B) lines 22–23 ("She . . . modern")
  - C) lines 23–25 ("She had . . . period")
  - D) lines 32–33 ("I should . . . said")

6

- As used in line 24, "veneration" most nearly means
- A) distaste.
  - B) reverence.
  - C) deference.
  - D) awe.

7

- The primary purpose of paragraph 5 (lines 15–31) is to
- A) establish Rachel's lack of interest in ethics and aesthetics.
  - B) detail the differences between Rachel's generation and her father's.
  - C) validate Rachel's sense that her father is untrustworthy.
  - D) provide insight into Rachel's view of the past.

8

- It can reasonably be inferred that the relationship between Rachel's father and her aunt
- A) has been damaged by a misunderstanding.
  - B) is strained as a result of their past conflicts.
  - C) has become less tense as time has passed.
  - D) is uneasy due to their different financial situations.

9

- Which choice provides the best evidence for the answer to previous question?
- A) lines 13–14 ("You're . . . signature")
  - B) lines 33–36 ("How . . . disagreed")
  - C) lines 61–64 ("He sighed . . . speculations")
  - D) lines 68–72 ("There . . . old")

## Literature

10

Which conclusion does Rachel make based on the letter from her aunt?

- A) Her aunt's personality is consistent with her father's stories.
- B) Her father has made up a great deal about her due to his forgetfulness.
- C) Her aunt has taken pity on them and wants to leave them her fortune.
- D) She and her aunt are remarkably alike in personality.

11

In lines 56–60, the information about wealth serves mainly to

- A) emphasize that Rachel's aunt makes strong demands of her family.
- B) provide context for the disagreement between Rachel's aunt and her father.
- C) illustrate why Rachel generally disregards her father's advice.
- D) reveal that Rachel may benefit from building a relationship with her aunt.

# Literature

This passage is excerpted from Katherine Mansfield, *The Voyage*.  
Originally published in 1921..

The Picton boat was due to leave at half-past eleven. It was a beautiful night, mild, starry, only when they got out of the cab and started to walk down the Old Wharf that jutted out into the harbour, a faint wind blowing off the water ruffled under Fenella's hat, and she put up her hand to keep it on. It was dark on the Old Wharf, very dark; the wool sheds, the cattle trucks, the cranes standing up so high, the little squat railway engine, all seemed carved out of solid darkness. Here and there on a rounded wood-pile, that was like the stalk of a huge black mushroom, there hung a lantern, but it seemed afraid to unfurl its timid, quivering light in all that blackness; it burned softly, as if for itself.

Fenella's father pushed on with quick, nervous strides. Beside him her grandma bustled along in her crackling black ulster; they went so fast that she had now and again to give an undignified little skip to keep up with them. As well as her luggage strapped into a neat sausage, Fenella carried clasped to her her grandma's umbrella, and the handle, which was a swan's head, kept giving her shoulder a sharp little peck as if it too wanted her to hurry. Men, their caps pulled down, their collars turned up, swung by; a few women all muffled scurried along; and one tiny boy, only his little black arms and legs showing out of a white woolly shawl, was jerked along angrily between his father and mother; he looked like a baby fly that had fallen into the cream.

Then suddenly, so suddenly that Fenella and her grandma both leapt, there sounded from behind the largest wool shed, that had a trail of smoke hanging over it, "MiaooooOO!" "First whistle," said her father briefly, and at that moment they came in sight of the Picton boat. Lying beside the dark wharf, all strung, all beaded with round golden lights, the Picton boat looked as if she was more ready to sail among stars than out into the cold sea. People pressed along the gangway. First went her grandma, then her father, then Fenella. They stepped out of the way of the hurrying people, and standing under a little iron stairway that led to the upper deck they began to say goodbye.

"There, mother, there's your luggage!" said Fenella's father, giving grandma another strapped-up sausage.

"Thank you, Frank."

"And you've got your cabin tickets safe?"

"Yes, dear."

"And your other tickets?"

Grandma felt for them inside her glove and showed him the tips.

"That's right."

He sounded stern, but Fenella, eagerly watching him, saw that he looked tired and sad.

"MiaooooOO!" The second whistle blared just above their heads, and a voice like a cry shouted, "Any more for the gangway?"

"You'll give my love to father," Fenella saw her father's lips say. And her grandma, very agitated, answered, "Of course I will, dear. Go now. You'll be left. Go now, Frank. Go now."

"It's all right, mother. I've got another three minutes." To her surprise Fenella saw her father take off his hat. He clasped grandma in his arms and pressed her to him. "God bless you, mother!" she heard him say.

And grandma put her hand, with the black thread glove that was worn through on her ring finger, against his cheek, and she sobbed, "God bless you, my own brave son!"

This was so awful that Fenella quickly turned her back on them, swallowed once, twice, and frowned terribly at a little green star on a mast head. But she had to turn round again; her father was going.

"Goodbye, Fenella. Be a good girl." His cold, wet moustache brushed her cheek. But Fenella caught hold of the lapels of his coat.

"How long am I going to stay?" she whispered anxiously. He wouldn't look at her. He shook her off gently, and gently said, "We'll see about that. Here! Where's your hand?" He pressed something into her palm. "Here's a shilling in case you should need it."

A shilling! She must be going away for ever! "Father!" cried Fenella. But he was gone. He was the last off the ship. The sailors put their shoulders to the gangway. A huge coil of dark rope went flying through the air and fell "thump" on the wharf. A bell rang; a whistle shrilled. Silently the dark wharf began to slip, to slide, to edge away from them. Now there was a rush of water between. Fenella strained to see with all her might. Was that father turning round? Or waving? Or standing alone? Or walking off by himself? The

# Literature

85

strip of water grew broader, darker. Now the Picton boat began to swing round steady, pointing out to sea. It was no good looking any longer.

1

Which choice best summarizes the passage?

- A) A girl and her family brace for a long voyage overseas and prepare for a new chapter in their lives.
- B) A girl and her family exchange goodbyes and experience an emotional departure.
- C) A girl and her family adjust to a new living situation and resign themselves to an unclear future.
- D) A girl and her family reflect on their changing relationships and settle into their new roles.

2

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

- A) a ship's nighttime departure to the devastating emotional impact of a family's separation.
- B) a family's protracted farewell to a description of a ship's sailors preparing to depart.
- C) a description of a boat dock to an exchange of money between family members.
- D) a vivid illustration of a setting to the sense of resignation one character experiences.

3

The author includes a lengthy description of the Old Wharf most likely to

- A) show that the harbor is an important setting that emphasizes the family's separation.
- B) provide a vivid visual backdrop that underscores the importance of what is left behind.
- C) establish a tense and hurried atmosphere that foreshadows the action of the story.
- D) emphasize how the wharf at night creates an unsettling ambiance for the passers-by.

4

What main effects do the words “timid” and “quivering,” used in the first paragraph, have on the tone of the passage?

- A) They create an ominous tone that foreshadows Fenella's separation from her father.
- B) They create a solemn tone that contrasts with Fenella's emotions about leaving.
- C) They create an uncertain tone that reflects Fenella's relationship with her father.
- D) They create a sinister tone that implies Fenella's wariness of the situation.

5

It can be reasonably inferred that Fenella's father “looked tired and sad” (line 48) because he

- A) has a long journey ahead of him.
- B) feels concerned about his family's tickets.
- C) is going to miss his family.
- D) senses something is wrong.

6

Which statement best characterizes the relationship between Fenella's father and grandmother?

- A) Their relationship is complicated by quiet disagreements.
- B) Their relationship is loving and includes tender sentiments.
- C) Their relationship is troubled because of tense animosity.
- D) Their relationship is restrained and based on polite affection.

7

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

- A) lines 38–40 (“There . . . Frank”)
- B) lines 52–55 (“You’ll . . . now”)
- C) lines 56–57 (“It’s . . . hat”)
- D) lines 60–62 (“And . . . son”)

# Literature

8

As used in line 63, "awful" most nearly means

- A) distressing.
- B) disgusting.
- C) shocking.
- D) appalling.

9

Which choice best describes Fenella's attitude toward her imminent journey?

- A) She is defiant in the face of an unclear future.
- B) She is worried about her impending separation from her father.
- C) She is frightened about the journey by boat she is about to take.
- D) She is resolute in her belief that she will be reunited with her father soon.

10

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

- A) lines 68–71 ("But . . . her")
- B) lines 75–76 ("Father . . . ship")
- C) lines 81–83 ("Fenella . . . himself")
- D) lines 84–86 ("Now . . . longer")

11

At the end of the passage, Fenella is convinced that she will be away for a very long time because

- A) her father has given her what she considers to be a great deal of money.
- B) her father has refused to answer her about the length of her travels.
- C) her father has said goodbye and told her to "be a good girl."
- D) her father has exchanged an emotional farewell with her grandmother.

# Literature

This passage is adapted from P.G. Wodehouse, "Extricating Young Gussie." Originally published in 1917.

She sprang it on me before breakfast. There in seven words you have a complete character sketch of my Aunt Agatha. I could go on indefinitely about brutality and lack of consideration. I merely say that she routed me out of bed to listen to her painful story somewhere in the small hours. It can't have been half past eleven when Jeeves, my man, woke me out of the dreamless and broke the news:

'Mrs Gregson to see you, sir.'

I thought she must be walking in her sleep, but I crawled out of bed and got into a dressing-gown. I knew Aunt Agatha well enough to know that, if she had come to see me, she was going to see me. That's the sort of woman she is.

She was sitting bolt upright in a chair, staring into space. When I came in she looked at me in that darn critical way that always makes me feel as if I had gelatine where my spine ought to be. Aunt Agatha is one of those strong-minded women. I should think Queen Elizabeth must have been something like her. She bosses her husband, Spencer Gregson, a battered little chappie on the Stock Exchange. She bosses my cousin, Gussie Mannering-Phipps. She bosses her sister-in-law, Gussie's mother. And, worst of all, she bosses me. She has an eye like a man-eating fish.

I dare say there are fellows in the world—men of blood and iron, don't you know, and all that sort of thing—whom she couldn't intimidate; but if you're a chappie like me, fond of a quiet life, you simply curl into a ball when you see her coming, and hope for the best. My experience is that when Aunt Agatha wants you to do a thing you do it.

'Hello, Aunt Agatha!' I said.

'Bertie,' she said, 'you look a sight. You look perfectly dissipated.'

I was feeling like a badly wrapped brown-paper parcel. I'm never at my best in the early morning. I said so.

'Early morning! I had breakfast three hours ago, and have been walking in the park ever since, trying to compose my thoughts. I am extremely worried, Bertie. That is why I have come to you.'

And then I saw she was going to start something, and I bleated weakly to Jeeves to bring me tea. But she had begun before I could get it.

'What are your immediate plans, Bertie?'

'Well, I rather thought of tottering out for a bite of lunch later on, and then I might trickle off to Walton Heath for a round of golf.'

45 'I am not interested in your totterings and tricklings. I mean, have you any important engagements in the next week or so?'

I scented danger.

'Rather,' I said. 'Heaps! Millions! Booked solid!'

50 'What are they?'

'I—er—well, I don't quite know.'

'I thought as much. You have no engagements. Very well, then, I want you to start immediately for America.'

'America!'

55 Do not lose sight of the fact that all this was taking place on an empty stomach, shortly after the rising of the lark.

'Yes, America. I suppose even you have heard of America?' 'But why America?'

60 'Because that is where your Cousin Gussie is. He is in New York, and I can't get at him.'

'What's Gussie been doing?'

'Gussie is making a perfect idiot of himself.'

To one who knew young Gussie as well as I did, the words opened up a wide field for speculation.

65 'In what way?'

'He has lost his head over a creature.'

70 On past performances this rang true. Ever since he arrived at man's estate Gussie had been losing his head over creatures. He's that sort of chap. But, as the creatures never seemed to lose their heads over him, it had never amounted to much.

75 'I imagine you know perfectly well why Gussie went to America, Bertie. He is not clever, but he is very good-looking, and, though he has no title, the Mannering-Phippses are one of the best and oldest families in England. He had some excellent letters of introduction, and when he wrote home to say that he had met the most charming and beautiful girl in the world I felt quite happy. He continued to rave about her for several mails, and then this morning a letter has come from him in which he says, quite casually as a sort of afterthought, that he knows we are broadminded enough not to think any the worse of her because she is on the vaudeville stage.'

'Oh, I say!'

# Literature

1

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

- A) description of a character to a conversation between that character and the narrator.
- B) depiction of the narrator's morning routine to an explanation on the modifications the narrator is making to that routine.
- C) examination of the narrator's feelings to a portrayal of another character's concern for those feelings.
- D) discussion of the differences between two characters to an interaction that exemplifies those differences.

2

Which statement best describes the narrator's point of view regarding Aunt Agatha?

- A) The narrator admires Aunt Agatha and agrees with her assertions.
- B) The narrator is skeptical of Aunt Agatha and distrusts her motives.
- C) The narrator respects Aunt Agatha but is intimidated by her demeanor.
- D) The narrator is amused by Aunt Agatha but offended by her rudeness.

3

The passage indicates that the narrator is upset by being woken up because he had

- A) told Jeeves not to wake him.
- B) slept badly that night.
- C) not yet begun to dream.
- D) expected to sleep longer.

4

The narrator's description in lines 13-28 primarily serves to

- A) illustrate Aunt Agatha's personality and contrast it with that of the narrator.
- B) provide background information about the narrator and Aunt Agatha's family.
- C) detail Aunt Agatha's poor treatment of her husband and the narrator's cousin.
- D) introduce the problem that Aunt Agatha is asking the narrator to help solve.

5

The main effect of the phrases "totterings and tricklings" and "important engagement" lines 45-47 is to

- A) make it clear that Aunt Agatha does not understand what the narrator has just said about his plans.
- B) emphasize that Aunt Agatha views the narrator's activities as being of little significance.
- C) highlight Aunt Agatha's lack of interest in spending time with the narrator during her visit.
- D) underscore that Aunt Agatha does not want her visit to interfere with the narrator's plans.

6

The remarks in lines 61-64 ("What's ... speculation") serve mainly to

- A) suggest that Gussie is known for foolish behavior.
- B) emphasize the narrator's desire to help Aunt Agatha.
- C) cast doubt on Aunt Agatha's reason for visiting the narrator.
- D) imply that the narrator is unconcerned with Gussie's well-being.

7

As used in line 62, "perfect" most nearly means

- A) accurate.
- B) flawless.
- C) absolute.
- D) ideal.

8

In the passage, Aunt Agatha implies that the problem with Gussie's latest romantic attachment is that the woman he is pursuing

- A) does not have feelings for Gussie.
- B) thinks Gussie's family is not open-minded.
- C) is an inappropriate match for Gussie.
- D) has lied to Gussie about her background.

# Literature

9

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

- A) lines 66 (“He ... creature”)
- B) lines 69–70 (“But ... much”)
- C) lines 74–77 (“He ... happy”)
- D) lines 77–82 (“He ... stage”)

10

Based on the passage, the most likely outcome of the narrator’s meeting with Aunt Agatha is that the narrator will

- A) criticize Aunt Agatha for her rudeness.
- B) in Gussie’s decisions.
- C) recommend to Aunt Agatha that she not intervene travel to America.
- D) write a letter to Gussie.

11

Which details from the passage best support the answer to the previous question?

- A) Aunt Agatha makes the narrator get out of bed, and the narrator states that he could speak endlessly about her “brutality and lack of consideration” (lines 3–4).
- B) Aunt Agatha makes a specific request of the narrator, and the narrator reports that when Aunt Agatha “wants you to do a thing you do it” (lines 27–28).
- C) Aunt Agatha inquires as to the narrator’s schedule, and the narrator invents engagements, claiming he is “Booked solid!” (line 49).
- D) Aunt Agatha demands that the narrator set forth on a voyage but the narrator is confused, asking “why America?” (line 58).

## ANSWER KEY

### Diagnostic quiz

Science	passage1	ACBCD	passage2	BCABD
Social science	passage1	ABDBC	passage2	ACDCC
History	passage1	BCCDC	passage2	BCBBC
Literature	passage1	ACBDD	passage2	ADCCB

### Science

#### Skill level 2

Passage 1	DBACA	DDCAA	D	Passage 4	AAAAA	ABAAA	A	Passage 7	BCAAA	ADADA	D
Passage 2	DABCD	CDBAB	C	Passage 5	DDBAD	ADCAC	B	Passage 8	CABAD	DBDBA	D
Passage 3	CCCAB	ABCBC	A	Passage 6	ABABC	BACAB	C	Passage 9	BCBAD	DCDBD	A

#### Skill level 3

Passage 1	CBDAC	ADCBA	B	Passage 4	CABBB	ADCCA	B	Passage 7	AABDC	ACBCB	D
Passage 2	DBABC	DCACD	A	Passage 5	BADAC	BACAC	D				
Passage 3	BDACD	CBAAC	C	Passage 6	DBCBD	ABBDB	C				

#### Skill level 4

Passage 1	DBDAB	CBBAC	B	Passage 4	DBDAC	ABADA	A	Passage 7	ADCAA	BBBDA	C
Passage 2	BDABC	AABAD	D	Passage 5	BADAA	AAABC	A				
Passage 3	BDABC	DABAC	D	Passage 6	CDDAD	DAACC	D				

### Social science

#### Skill level 2

Passage 1	DDCBB	DBAAD	C	Passage 3	BDCAA	BBBCA	B
Passage 2	AADAA	AABCA	B	Passage 4	BBBDA	DDACA	D

#### Skill level 3

Passage 1	CBACC	BADAB	B	Passage 3	BADCC	DACBC	B	Passage 5	ACBCD	BADDA	D
Passage 2	ABDCA	BCADA	A	Passage 4	CACDB	DBCBA	D	Passage 6	AADDC	CACBB	D

#### Skill level 4

Passage 1	CBABC	ADDCB	C	Passage 3	BDBDC	AADCA	B
Passage 2	CDBDC	ABCAD	A				

## History

### Skill level 2

**Passage 1** DBABC ABBDC A  
**Passage 2** DBACA ADAAB B  
**Passage 3** BDACA BBDCB C

**Passage 4** CDADA CBDBA A  
**Passage 5** BDAAA BADCA C  
**Passage 6** BCAAA DDBCD D

### Skill level 3

**Passage 1** ACBAD CBBDB D  
**Passage 2** AABDC DBDCA B  
**Passage 3** BCACA BDBAA B

**Passage 4** CACBB ADCAA C  
**Passage 5** BACDC AABDC D

### Skill level 4

**Passage 1** BDBCC AABCC A  
**Passage 2** DCCAC DBDD B

**Passage 3** BADBC DADBA D  
**Passage 4** BBDCD ACAAB D

## Literature

### Skill level 2

**Passage 1** CACBD BABAC A  
**Passage 2** DADBA DCCBD A  
**Passage 3** ACABD DAADC C

**Passage 4** BCDBB ABACD A  
**Passage 5** AACBD AACBD D  
**Passage 6** BCBAC BAADD D

### Skill level 3

**Passage 1** ACACC CBDDC A  
**Passage 2** ACABD DCCBA C  
**Passage 3** BBACA BDCDC B

**Passage 4** BACDA DCBDA A  
**Passage 5** DCDA CADBC A

### Skill level 4

**Passage 1** CABAC AABAB B  
**Passage 2** CAABB BADCA D

**Passage 3** CABCA BDBBA D  
**Passage 4** BDCAC BDABA A  
**Passage 5** ACDAB ACCDC B