

The New York City Department of Education

**2024 Specialized High Schools Admissions Test**

**GENERAL DIRECTIONS**

**Student Name:** \_\_\_\_\_

**Identifying Information**

Turn to Side 1 of the answer sheet.

**Notify the proctor immediately if you are ill or should not be taking this test. Do not sign the statement or begin the test. Return your answer sheet to the proctor.**

**Line 1:** Read the statement and sign your name in the space following the word "signature." Do not print your name.

**Line 2:** Print today's date, using the numbers of the month, the day, and the year. For example, the date September 21, 2024, would be 9-21-24.

**Line 3:** Print your birth date, using the numbers of the month, the day, and the year. For example, a birth date of March 1, 2009, would be 3-1-09.

**Grid 4:** Print the letters of your first name, or as many as will fit, in the boxes. If you have a middle initial, print it in the box labeled "MI." Then print the letters of your last name, or as much as will fit, in the boxes provided. Below each box, fill in the circle that contains the same letter as the box. If there is a space or a hyphen in your name, fill in the circle under the appropriate blank or hyphen.

**Make dark marks that completely fill the circles.** If you change a mark, be sure to erase the first mark completely.

**Grid 5:**

1. Print the name of the school where you are now enrolled in the space at the top of the grid.
2. In the boxes marked "SCHOOL CODE," print the six-digit code that identifies your school. Below each box, fill in the circle that contains the same letter or number as the box. (You can find your school code on your Test Ticket. If it is not there, tell the proctor, and the proctor will get the school code for you.)
3. If you attend a private or parochial school, fill in the circle marked "P."

**Grid 6:** Complete the grid with your date of birth. Print the first three letters of the month in the first box, the number of the day in the next box, and the year in the last box. Then fill in the corresponding circles.

**Grid 7:** Print your student ID number in Grid 7. You can find your student ID number on your Test Ticket. In the boxes, print your nine-digit student ID number. Below each box, fill in the circle containing the same number as in the box.

**Grid 8:** In most cases, Grid 8 is already filled in for you. If it is not, copy the letter and numbers shown in the upper-right corner of your test booklet into the boxes. Below each box, fill in the circle containing the same letter or number as the box.

Now review Side 1 to make sure you have completed all lines and grids correctly. Review each column to see that the filled-in circles correspond to the letters or numbers in the boxes above them.

Turn your answer sheet to Side 2 and flip this booklet over to continue with General Directions.

**DO NOT OPEN THIS BOOKLET  
UNTIL YOU ARE TOLD TO DO SO.**

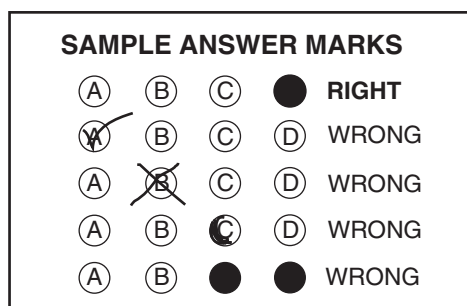
**TURN YOUR BOOKLET OVER TO THE BACK COVER.**

## GENERAL DIRECTIONS, continued

Print your test booklet letter and numbers, and your name, first name **first**, in the spaces provided at the top of Side 2 of the answer sheet.

### Marking Your Answers

- Mark each of your answers on the answer sheet in the row of circles matching the question number printed in the test booklet.
- Use only a Number 2 pencil.
- If you change an answer, be sure to erase it completely.
- Be careful to avoid making any stray pencil marks on your answer sheet. **Do not make any marks on your answer sheet other than filling in your answer choices.**
- Each question has only one correct answer. If you mark more than one circle in any answer row, that question will be scored as incorrect.



- You can use your test booklet or the provided scrap paper to take notes or solve questions; however, your answers must be recorded on the answer sheet in order to be counted.
- **You will not be able to mark your answers on the answer sheet after time is up, and answers left in the test booklet will not be scored.**

### Planning Your Time

- You have 180 minutes to complete the entire test. **How you divide the time between the English Language Arts and Mathematics sections is up to you.**
- If you begin with the English Language Arts section, you may go on to the Mathematics section as soon as you are ready. Likewise, if you begin with the Mathematics section, you may go on to the English Language Arts section as soon as you are ready.
- Be sure to read the directions for each section carefully.
- Each question has only one correct answer. Choose the best answer for each question.
- When you finish a question, go on to the next, until you have completed the last question or run out of time.
- Your score is determined by the number of questions you answer correctly. **Answer every question, even if you may not be certain which answer is correct.**
- Don't spend too much time on a difficult question. Come back to it later if you have time.
- If you complete the test before the test time (180 minutes) is over, you may go back to review questions in either section.
- Students must stay for the entire test session (180 minutes).

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO**



# B



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# PART 1 — ENGLISH LANGUAGE ARTS

57 QUESTIONS

## REVISING/EDITING

### QUESTIONS 1-15 (PART A AND PART B)

#### REVISING/EDITING PART A

**DIRECTIONS:** Read and answer the following questions. You will be asked to recognize and correct errors so that the sentences or short paragraphs follow the conventions of standard written English. You may write in your test booklet as needed to take notes. You should reread relevant parts of the sentences or paragraphs, while being mindful of time, before marking the **best** answer for each question.

1. What is the **best** way to combine these sentences to clarify the relationship between ideas?

- (1) The International Space Station has been inhabited by crew members since 2000.  
(2) Tourists will soon be allowed to pay for visits to the space station.  
(3) Because the cost is \$52–\$58 million round trip, few people will be able to take advantage of the opportunity to have a vacation in outer space.

- A.** The International Space Station has been inhabited by crew members since 2000, but tourists will soon be allowed to pay for visits to the space station, which cost \$52–\$58 million round trip, so few people will be able to take advantage of the opportunity to have a vacation in outer space.
- B.** The International Space Station has been inhabited by crew members since 2000 and will soon allow tourists to pay for visits, but because the cost is \$52–\$58 million round trip, few people will be able to take advantage of the opportunity to have a vacation in outer space.
- C.** The International Space Station has been inhabited by crew members since 2000, but tourists will soon be allowed to pay for visits to the space station, though the cost is \$52–\$58 million round trip, so few people will be able to take advantage of the opportunity to have a vacation in outer space.
- D.** The International Space Station has been inhabited by crew members since 2000, and tourists will soon be allowed to pay for visits to the space station because the cost is \$52–\$58 million round trip, therefore few people will be able to take advantage of the opportunity to have a vacation in outer space.

2. Which sentence contains an error in its construction and should be revised?

(1) In 1976, the National Basketball Association (NBA) absorbed several teams of the American Basketball Association (ABA), including the New York Nets, who played in the Long Island area at the time. (2) The owner of the Nets decided to take the team to New Jersey after the team had financial troubles, where the team played for thirty-five seasons. (3) The New Jersey Nets had sixteen playoff appearances, including two appearances in the NBA finals. (4) In 2012, the team changed ownership and returned to New York, where the team now plays under the name the Brooklyn Nets.

- E. sentence 1  
F. sentence 2  
G. sentence 3  
H. sentence 4
3. Read this sentence.

The Appalachian Trail is a really long trail that a lot of people do each year.

Which revision of the sentence uses the **most** precise language?

- A. The Appalachian Trail is an extremely long trail that millions of people do each year.  
B. The Appalachian Trail is a 2,200-mile trail that more than a million people hike each year.  
C. The Appalachian Trail is a 2,200-mile trail that two million people hike each year.  
D. The Appalachian Trail is a lengthy trail that a couple million people do each year.

4. Which pair of revisions need to be made in this paragraph?

(1) When coal was used to heat homes, it frequently left soot stains on the walls. (2) Brothers Cleo and Noah McVicker, who owned a cleaning product company created a doughy substance to help people remove this soot. (3) Over time, as natural gas becomes more common, people had little need for soot cleansers, and the McVickers' family company struggled to stay in business. (4) Then one day Joe McVicker, Cleo's son, learned that his sister-in-law had been using the substance for art projects in her classroom, so he remarketed the product as the toy known today as Play-Doh.

- E.** Sentence 1: Delete the comma after **homes**.  
Sentence 3: Change **becomes** to **became**.
- F.** Sentence 1: Delete the comma after **homes**.  
Sentence 4: Change **remarketed** to **had remarketed**.
- G.** Sentence 2: Insert a comma after **company**.  
Sentence 3: Change **becomes** to **became**.
- H.** Sentence 2: Insert a comma after **company**.  
Sentence 4: Change **remarketed** to **had remarketed**.

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## REVISING/EDITING PART B

**DIRECTIONS:** Read each of the following two texts and answer the related questions. You will be asked to improve the writing quality of each text and to correct errors so that the texts follow the conventions of standard written English. You should reread relevant parts of each text, while being mindful of time, before marking the **best** answer for each question.

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### Find Time to Volunteer

(1) Many people believe that they gain a greater sense of purpose by giving their time to serve others. (2) These are the people who spend their free time volunteering at various places within the community. (3) Those who are served benefit from the work of these volunteers. (4) However, research shows that those who volunteer also receive benefits.

(5) For many students, this proposition may sound impossible. (6) Schoolwork can require hours of study each week. (7) Volunteering at a retirement center or homeless shelter requires both time and energy. (8) Extracurricular activities fill up after-school time. (9) Family obligations and part-time jobs often have to be worked into the schedule, too. (10) However, if students can find time to volunteer, even for a few hours a month, they may find that the benefits outweigh the scheduling difficulties.

(11) To begin with, students who engage in volunteer activities acquire valuable skills and experience, which can help them focus on potential fields of study and career options.

(12) Furthermore, when students list volunteer work on college applications, admissions counselors see applicants who care about making their community and college campus a better place.

(13) Volunteerism benefits more than students applying to college. (14) This type of experience is equally important for students moving directly into the workforce after high school.

(15) Volunteering demonstrates initiative, dedication, and a strong work ethic, qualities that companies value in a potential employee. (16) In a CareerBuilder study, 60 percent of managers regarded volunteerism as a significant asset when considering applicants.

(17) Students who volunteer undoubtedly make a positive investment in their future, but they also affect their present quality of life. (18) Studies have shown that volunteering is good for both the mind and the body. (19) Volunteering can boost mood levels and reduce anxiety. (20) According to the Mayo Clinic,<sup>1</sup> the feeling of doing something meaningful and the appreciation received from that action can reduce stress.

(21) Even the busiest of students can find a way to donate some time to a worthy cause.

(22) Though managing different commitments may seem overwhelming at times, students are sure to feel a sense of fulfillment in volunteerism.

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<sup>1</sup>**Mayo Clinic:** a nonprofit medical organization dedicated to treatment and research

5. Which revision of sentence 2 uses the **most** precise language?
- A. These are the people who spend their free time volunteering at animal shelters, helping with activities in community centers, or cleaning up parks.
  - B. These are the people who spend their free time helping others in numerous ways at a variety of places, events, or organizations that need support.
  - C. These are the people who spend their free time working at local establishments that help people, animals, or other groups in need of assistance.
  - D. These are the people who spend a lot of time volunteering at places where they can help people in many ways.
6. Which sentence should follow sentence 4 to introduce the main claim of the passage?
- E. With that in mind, high school students should consider engaging in some form of regular volunteerism.
  - F. Fortunately for students, these benefits are guaranteed to produce both immediate and long-term results.
  - G. In fact, studies have confirmed that volunteerism can be beneficial for students, the family, and the community.
  - H. For this reason, high school students should learn about how helping others can strengthen their communities.
7. Which sentence is least relevant to the ideas presented in the second paragraph (sentences 5–10) and should be deleted?
- A. sentence 6
  - B. sentence 7
  - C. sentence 8
  - D. sentence 9



8. Which of these would **best** follow sentence 12 and support the ideas presented in the third paragraph (sentences 11–12)?
- E. These students show that they are likely to be responsible, reliable, and helpful young adults. Admissions counselors know that character traits like these will benefit the applicants as well as whomever they interact with.
  - F. Volunteering can help students meet new people who can provide references and advice to the students when they are applying to colleges. It can also be an invaluable opportunity for students to meet possible future employers.
  - G. The counselors hope that young adults who demonstrate this behavior will go on to volunteer during their college years, working on campus in student government and leadership programs or serving in the community at hospitals, schools, and homeless shelters.
  - H. Many colleges are looking for students who are not just academically successful but who also work well with others and care about improving and serving surrounding communities.
9. Which concluding sentence should replace sentence 22 to provide the **best** support for the argument presented in the passage?
- A. In every city, there are homeless shelters, food pantries, youth centers, and political campaigns that depend on the support and commitment of hardworking young people.
  - B. Clearly, students who volunteer will experience a host of benefits, such as learning new skills, meeting interesting people, opening up opportunities for the future, and gaining a sense of satisfaction.
  - C. When students carefully evaluate their activities and prioritize volunteerism, they find a way to work it into their schedule and are soon encouraging their peers to do the same.
  - D. Whether they are seeking admission to college, preparing to enter the workforce, or simply looking to reduce stress, high school students who volunteer can help themselves as much as they help others.

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## Moving through Mountains

(1) An age-old proverb says that necessity is the mother of invention. (2) Centuries of human ingenuity in the face of obstacles prove this to be true. (3) For many years the Swiss Alps, a mountain range spanning southern Switzerland and northern Italy, were such an obstacle.

(4) Roads and railways had to navigate around the mountains or through winding tunnels inside the mountains, making the transportation of people and goods difficult and time-consuming. (5) In 2016 these burdens were eased with the completion of the Gotthard Base Tunnel.

(6) Construction of the high-speed railway tunnel began in 1996. (7) The tunnel was created through the use of tunnel-boring machines, which are giant drills with a flat rotating head called a cutter head. (8) Each of the tunnel-boring machines used during the construction of the tunnel was about the length of four football fields arranged end-to-end. (9) During the seventeen-year construction period, 28 million tons of rock were removed, enough to rebuild the Great Pyramid of Giza five times. (10) This massive construction project is reported to have cost \$12 billion.

(11) After that, 4 million cubic meters of concrete, or enough concrete to build eighty-four Empire State Buildings, were used to construct and support the tunnel.

(12) In a few years, the high-speed railway will carry more than 250 freight trains and 55 passenger trains a day, with most traveling at speeds of around 100 to 125 miles per hour. (13) It will be faster for people to travel between northern and southern Europe. (14) The travel time between the European cities of Zurich, Switzerland, and Milan, Italy, will be reduced by an hour. (15) Many European leaders compare the Gotthard Base Tunnel to the Channel Tunnel, a 33-mile underwater tunnel that connects the United Kingdom and France. (16) While there is no roadway in the Channel Tunnel, people can drive their cars onto special trains that will carry vehicles through to the other side.

(17) Just as traffic congestion in major cities led to the construction of underground local transportation, natural formations, such as mountain ranges, have also sent people underground for faster, easier, and cheaper methods of transportation across larger areas. (18) There is renewed interest in constructing innovative methods of transportation that will help eliminate problems associated with traveling to and from certain areas.

- 10.** Which sentence should be added after sentence 5 to introduce the main topic of the passage?
- E.** The construction of the Gotthard Base Tunnel was approved by Swiss voters in 1992 and was funded by tolls, fuel taxes, and government loans.
  - F.** Leaders from several European countries attended the opening ceremonies for the Gotthard Base Tunnel, a Swiss tunnel.
  - G.** The Gotthard Base Tunnel is the world’s longest and deepest railway tunnel, stretching 35.5 miles straight through the base of the Swiss Alps.
  - H.** The Gotthard Base Tunnel continues to help reduce the number of freight trucks on the roadways in the Swiss Alps.
- 11.** Which sentence should be added to follow and support sentence 7?
- A.** The tunnel-boring machine is helpful to tunnel builders in the modern era and has been an improvement over dynamite.
  - B.** These enormous tunnel-boring machines function somewhat like a cheese grater, with the cutter head grinding slowly through rock and stone.
  - C.** Engineers had considered making a tunnel under the mountains for many years, but it was impossible to do without modern tunnel-boring machines.
  - D.** Different types of cutter heads are used with tunnel-boring machines depending on the geology of the area where the tunnel is being created.
- 12.** Where should sentence 11 be moved in order to improve the organization of the second paragraph (sentences 6–11)?
- E.** to the beginning of the paragraph (before sentence 6)
  - F.** between sentences 6 and 7
  - G.** between sentences 8 and 9
  - H.** between sentences 9 and 10
- 13.** Which sentence presents information that shifts away from the main topic of the third paragraph (sentences 12–16) and should be removed?
- A.** sentence 13
  - B.** sentence 14
  - C.** sentence 15
  - D.** sentence 16

- 14.** Which transition phrase should be added to the beginning of sentence 18?
- E.** Although the Gotthard Base Tunnel is mainly for freight trains,
  - F.** With the Gotthard Base Tunnel taking ten years to complete,
  - G.** Because of the successful completion of the Gotthard Base Tunnel,
  - H.** As the number of trains using the Gotthard Base Tunnel increases,
- 15.** Which concluding sentence should be added after sentence 18 to support the topic presented in the passage?
- A.** There is proof that underground tunnels such as the Gotthard Base Tunnel are beneficial to the economy of the surrounding area.
  - B.** The Gotthard Base Tunnel is an extraordinary example of how human ingenuity and persistence can overcome great obstacles.
  - C.** The completion of the Gotthard Base Tunnel shows that people can work together to achieve important goals.
  - D.** The Swiss government is confident that the economic impact of the Gotthard Base Tunnel will be worth its construction cost.

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# READING COMPREHENSION

## QUESTIONS 16–57

**DIRECTIONS:** Read each of the following five texts and answer the related questions. You may write in your test booklet as needed to take notes. You should reread relevant parts of each text, while being mindful of time, before marking the **best** answer for each question. Base your answers only on the content within the text.

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## Excerpt from “How Exercise Could Help You Learn a New Language”

by Gretchen Reynolds

- 1 Many scientists suspect that exercise alters the biology of the brain in ways that make it more malleable and receptive to new information, a process that scientists refer to as plasticity.
- 2 But many questions have remained unanswered about movement and learning, including whether exercise is most beneficial before, during or after instruction and how much and what types of exercise might be best.
- 3 So for a new study, which was published recently in *PLOS One*, researchers in China and Italy decided to home in on language learning and the adult brain.
- 4 Language learning is interesting. As young children, almost all of us picked up our first language easily. We didn’t have to be formally taught; we simply absorbed words and concepts.
- 5 But by early adulthood, the brain generally begins to lose some of its innate language capability. It displays less plasticity in areas of the brain related to language. As a result, for most of us, it becomes harder to learn a second language after childhood.
- 6 To see what effects exercise might have on this process, the researchers first recruited 40 college-age Chinese men and women who were trying to learn English. The students had some facility with this second language but were far from proficient.
- 7 The researchers then divided the students into two groups. Those in one group would continue to learn English as they had before, primarily while seated in rote vocabulary-memorization sessions.
- 8 The others would supplement these sessions with exercise.
- 9 Specifically, the students would ride exercise bikes at a gentle pace (about 60 percent of their maximum aerobic capacity) beginning 20 minutes before the start of the lessons and continuing throughout the 15 minutes or so of instruction.
- 10 Both groups learned their new vocabulary by watching words projected onto large screens, together with comparable pictures, such as “apple” and a Red Delicious. They were shown 40 words per session, with the sequence repeated several times.
- 11 Afterward, the students all rested briefly and then completed a vocabulary quiz, using computer keys to note as quickly as possible whether a word was with its correct picture. They also responded to sentences using the new words, marking whether the sentences were accurate or, in the case of “The apple is a dentist,” nonsensical. Most linguists<sup>1</sup> feel that understanding sentences shows greater mastery of a new language than does simple vocabulary improvement.
- 12 The students completed eight vocabulary sessions over the course of two months.

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<sup>1</sup>**linguists:** scientists who study language

- 13 And at the end of each lesson, the students who had ridden bikes performed better on the subsequent vocabulary tests than did the students who sat still.
- 14 They also became more proficient at recognizing proper sentences than the sedentary students, although that difference did not emerge until after several weeks of instruction.
- 15 Perhaps most interesting, the gains in vocabulary and comprehension lingered longest for the cyclists. When the researchers asked the students to return to the lab for a final round of testing a month after the lessons—without practicing in the meantime—the cyclists remembered words and understood them in sentences more accurately than did the students who had not moved.
- 16 “The results suggest that physical activity during learning improves that learning,” says Simone Sulpizio, a professor of psychology and linguistics at the University Vita-Salute San Raffaele in Milan, Italy, and a study co-author.
- 17 These improvements extend beyond simply aiding in memorization, she added. The exercise also deepened language learners’ grasp of how to use their newly acquired words.
- 18 This study involved college students performing relatively light exercise, though, and cannot tell us whether other people completing other types of exercise would achieve the same results.
- 19 It also offers no clues about what is occurring inside the brain that might be contributing to the benefits of the exercise. But many past studies have shown that exercise prompts the release of multiple neurochemicals in the brain that increase the number of new brain cells and the connections between neurons, Dr. Sulpizio says. These effects improve the brain’s plasticity and augment the ability to learn.
- 20 From a real-world standpoint, the study’s implications might seem at first to be impractical. Few classrooms are equipped with stationary bicycles. But specialized equipment is probably unnecessary, Dr. Sulpizio says.
- 21 “We are not suggesting that schools or teachers buy lots of bicycles,” she says. “A simpler take-home message may be that instruction should be flanked by physical activity.”

From “How Exercise Could Help You Learn a New Language” by Gretchen Reynolds from THE NEW YORK TIMES, August 16, 2017. Copyright © 2017 The New York Times Company.



16. How does the author’s use of comparison in paragraphs 4 and 5 contribute to the development of ideas in the excerpt?

- E. It identifies why many adults are never able to learn a second language.
- F. It demonstrates why the study of adult language learning tries to include physical activity.
- G. It highlights why more is known about language learning in children than about language learning in adults.
- H. It explains why adults were the subjects of the study rather than children.

17. Read this sentence from paragraph 6.

**To see what effects exercise might have on this process, the researchers first recruited 40 college-age Chinese men and women who were trying to learn English.**

Which statement describes the function of the sentence in the overall structure of the excerpt?

- A. It indicates a shift from describing the results of the study to describing the process.
- B. It introduces the aspect of the research that was most critical to determining the results.
- C. It marks the change from explaining why the study was conducted to explaining how the study was conducted.
- D. It shows how questions were raised that could be addressed in further research.

18. Which sentence is the **best** summary of the research procedure used in the study in the excerpt?

- E. Researchers had a group of non-English-speaking students learn new English vocabulary by matching words and images on a computer screen, and also by analyzing words in context; some students exercised and some students sat still while learning.
- F. Researchers first divided non-English-speaking students into two groups, with one group exercising before and while studying English and the other group studying English without exercising; then, after instruction, student learning was assessed.
- G. Researchers first had non-English-speaking students sit on stationary bikes and pedal for 20 minutes before instruction and 15 minutes during instruction; then, after a rest period, students indicated whether English sentences made sense.
- H. Researchers asked non-English-speaking students to study English while sitting or biking; then the students’ vocabulary skills were assessed after a short break period and also after a break of a full month without their having studied any of the materials.

19. In the study described in the excerpt, researchers asked English learners to assess the sense of words in context because that task is
- A. better at determining the capability learners have of language than simple vocabulary recall.
  - B. consistent with the way earlier research was conducted on adult language learners.
  - C. a better way for learners to absorb the meaning of individual vocabulary words.
  - D. more difficult for learners to perform after an extended period of time has passed.

20. Read these sentences from paragraph 17.

**These improvements extend beyond simply aiding in memorization, she added. The exercise also deepened language learners' grasp of how to use their newly acquired words.**

Which sentence from the excerpt **best** explains why Sulpizio feels confident in the conclusion stated in these sentences?

- E. "They were shown 40 words per session, with the sequence repeated several times." (paragraph 10)
- F. "They also responded to sentences using the new words, marking whether the sentences were accurate or, in the case of 'The apple is a dentist,' nonsensical." (paragraph 11)
- G. "And at the end of each lesson, the students who had ridden bikes performed better on the subsequent vocabulary tests than did the students who sat still." (paragraph 13)
- H. "They also became more proficient at recognizing proper sentences than the sedentary students, although that difference did not emerge until after several weeks of instruction." (paragraph 14)

21. Paragraph 18 shows that the author’s perspective toward the study described in the excerpt is that
- A. though the study allowed some conclusions to be drawn, these conclusions are limited.
  - B. while the study focused on moderate exercise, it would have been better to focus on difficult exercise.
  - C. while the study was performed appropriately, it is doubtful the results can be duplicated.
  - D. though the study was about learning language, its conclusions can be applied to learning in general.
22. Which evidence from the excerpt is **most** relevant to the author’s claim that there are many unanswered questions about the relationship between movement and learning?
- E. the method of the study using one type of exercise and people from one age group
  - F. the statement from Sulpizio explaining past studies on neurochemicals in the brain
  - G. the finding of the study that exercise helps people recall information over a long period of time
  - H. the statement from Sulpizio describing how the results of the study can be applied

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*This narrative is about the Nez Perce, an American Indian tribe, in what is now northern Idaho. The tribe is preparing for a gathering before the coming winter.*

## Excerpt from *Do Them No Harm!*

by Zoa L. Swayne

- 1 In the moon of Ta-Yum, the hottest days of summer, when salmon spawn in the little streams and huckleberries ripen in the high mountains, people from many villages of the Chopunnish Nation gathered in the Oyaip Prairie for the work and festivities of their annual camas<sup>1</sup> harvest.
- 2 From far and near The People came. . . .
- 3 Should a stranger enter their homeland and ask, “Where are you from?” the reply was always, “We are Nee-mee-poo, The People who live here in this place.”
- 4 It was a time of Lawtiwa-mah-ton—a time of being friends together—when The People came for this last chance to enjoy being together before the Cold Moons kept them close to their fires. The visiting and trading, the foot racing and horse racing, and the gambling and stick games would be remembered and talked about long after they had forgotten the drudgery of digging and roasting camas, picking berries, or drying meat and fish. Lawtiwa-mah-ton! It was good to be friends together.
- 5 As was their custom since wahk-kee-ma, a time far back beyond the memory of man, they set up their camps in the same locations their parents and grandparents had occupied before them. Red Bear’s people, from Kamiah, made their camp near the trail that came out of the mountains. Their neighbors in Kamiah Valley, The People from Tee-e-lap-a-lo, had their camp close by. Across the wide meadow, by the great roasting pits, the camps of the Te-wap-poo and Ask-kah-poo were located. The tepees and ish-nash, brush shelters, of other groups nestled in their accustomed areas in and among the pines in such numbers that they encircled the entire meadow land.
- 6 Red Bear’s people had traveled all summer with neighboring bands, gathering and preparing roots, picking and drying berries, drying and smoking meat and fish for their winter food supply. Now they were at the Oyaip camp. The women worked hard to dig and cure as many bags of roots as they could during the warm, sunny days, for the sharp night air brought warnings that WARM was going and COLD was coming.
- 7 Everyone helped in some way. Most of the men fished or hunted for meat. While many of the women dug and roasted camas, other women and older children picked and dried berries.
- 8 And the younger children played. They played at hunting. They played with the babies. They played with their horses and puppies. They learned how to live through their play.
- 9 This sun, happiness, peace, and quiet blessed the Red Bear camp. All were busy with their daily tasks, until sudden cries came from the children playing by the trail.

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<sup>1</sup>**camas:** a wild, edible plant

- 10 "People coming! People coming! People coming on the trail from the high mountains!" they called as they ran to their elders, who looked sharply at the figures of approaching horsemen.
- 11 Were they friends or enemies? Did they bring good news or bad?
- 12 "Who can it be? What brings them here?" were the questions in every mind.
- 13 "Could they be the four hunters who had gone to Buffalo Country two summers past? Would they have news of the families who had gone long ago to Buffalo Country and never returned?"
- 14 It was customary for a hunting party to be gone for more than one season.
- 15 "Looks like hunters," the older men agreed. "Looks like they had good hunting. Maybe our four hunters. [They have] been gone many moons."
- 16 "Looks like five people—not four," others observed.
- 17 Excitement grew as the riders came close enough to be recognized.
- 18 "A-a-a-a, they are our four hunters! But who is the fifth person?" they asked.
- 19 "Looks like a woman. Who is she?"
- 20 The hunters rode up to the welcoming crowd, proud to show off the loads of meat, hides, and other trophies of their hunt. They paraded around the encampment for all to see how strong their Hunting Power had been—what great hunters they, themselves, were.
- 21 Red Bear's people rejoiced at their hunters' success. Good hunters brought good to everybody. The meat meant plenty of food and the hides meant soft-tanned robes to give comfort through the Cold Moons. But it was the sight of the frail figure of the woman that aroused their curiosity. Who was she? Where had she come from? . . .
- 22 "Belongs to Red Bear people. Gone then come back," the hunters said, as they dismounted and unloaded their packs. . . .
- 23 Now they could see! She was the daughter of the family gone so long ago! The girl-child who had left came back now—a grown woman.
- 24 "Wat-ku-ese!" the women cried. "Gone-from-Home-then-Come-Back. Wat-ku-ese!" And Wat-ku-ese was her name from that time on.
- 25 Gentle arms lifted Wat-ku-ese from her horse. The women brought her food and made a place for her to rest. For many suns they cared for her until she became stronger.
- 26 One evening Wat-ku-ese told her story for all to hear.

From DO THEM NO HARM!: Lewis and Clark Among the Nez Perce by Zoa L. Swayne. Published by Caxton Press. Copyright © 1990 by Zoa L. Swayne. Orofino, Idaho and Legacy House, Inc. Orofino, Idaho. All rights reserved.

23. Paragraph 1 contributes to the setting of the excerpt by establishing that
- A. the story’s location is a plentiful place that allows The People to enjoy a comfortable gathering.
  - B. the events in the story occurred in the past and are being remembered by The People.
  - C. the camp in the story is changing and that the changes are causing problems for The People.
  - D. the story’s plot begins as The People are observing their land and what it offers them.
24. In paragraphs 4 and 6, the beginning of the change in seasons affects the characters **mainly** by
- E. causing them to collect their bounty and feel eager to celebrate before it becomes cold.
  - F. making them want to rest and relax before the challenging work of the harvest begins.
  - G. forcing them to give up leisure time to prepare their camp for the coming winter.
  - H. allowing them to trade the goods they have prepared during the warm months.
25. How do paragraphs 7 and 9 convey a central idea of the excerpt?
- A. by explaining that The People often explore different areas, which shows the value of trying new things
  - B. by revealing that The People must complete many tasks, which shows the necessity of being organized
  - C. by suggesting that The People are influenced by the weather, which shows their close relationship with nature
  - D. by demonstrating that The People work together, which shows the importance of contributing to the community
26. In paragraph 8, the author repeats the word “played” **most likely** to
- E. emphasize how much the adults enjoy observing the children.
  - F. show how everyone finds a way to enjoy being at the gathering.
  - G. indicate the variety of activities available at the gathering.
  - H. characterize the manner in which the children master the work of adults.

27. How do paragraphs 11–13 affect the plot of the excerpt?
- A. They establish a feeling of mystery by presenting different points of view about the arriving people.
  - B. They contribute to the rising action by developing the idea that the arriving people could present a problem.
  - C. They lead to a turning point by describing the moment that the crowd realizes why the strangers have come.
  - D. They explain the cause of the main conflict by providing background information about the strangers.
28. In paragraph 20, the phrases “trophies of their hunt” and “paraded around” affect the paragraph by
- E. suggesting that the hunters are rewarded for their leadership.
  - F. emphasizing that The People are dependent on the hunters for food.
  - G. revealing that the hunters are pleased with their success.
  - H. indicating that The People have gathered specifically to welcome the hunters.
29. Which quotation from the excerpt **best** supports the idea that The People feel a connection to members of their group in spite of distance?
- A. “As was their custom since wahk-kee-ma, a time far back beyond the memory of man, they set up their camps in the same locations their parents and grandparents had occupied before them.” (paragraph 5)
  - B. “ ‘Would they have news of the families who had gone long ago to Buffalo Country and never returned?’ ” (paragraph 13)
  - C. “ ‘Looks like hunters,’ the older men agreed. ‘Looks like they had good hunting.’ ” (paragraph 15)
  - D. “But it was the sight of the frail figure of the woman that aroused their curiosity.” (paragraph 21)



30. Read these sentences from paragraph 22.

**“Belongs to Red Bear people. Gone then come back.”**

How does this statement affect the villagers in the excerpt?

- E. It increases their concern about why the woman is in their camp.
  - F. It makes them hopeful that more lost members will return before the winter.
  - G. It causes shock, leading them to grieve for the loss of the woman and her family.
  - H. It inspires amazement, making them want to reconnect with their returned family member.
31. The details in paragraph 5 about the locations of the camps and the details in paragraphs 23–24 about the reaction to the woman convey a theme of the excerpt by
- A. revealing the difficulties posed by moving often each year.
  - B. showing the connectedness among The People through the years.
  - C. indicating the value to The People of retelling stories about the past.
  - D. demonstrating the importance of choosing appropriate names.

CONTINUE TO THE NEXT PAGE ►

*Samuel Morse, an American inventor, is credited with creating the electronic telegraph, a communication device that allows users to send messages using a system of short and long pulses that represent letters, numbers, and punctuation. In 1844, the United States Congress passed the Telegraph Bill, which provided Morse with the funds to build an electric telegraph system.*

## Invention of the Telegraph

### Earlier Signal Systems

- 1 Long before Samuel F. B. Morse electrically transmitted his famous message “What hath God wrought?” from Washington to Baltimore on May 24, 1844, there were signaling systems that enabled people to communicate over distances. Most were visual or “semaphore” systems using flags or lights. In the eighteenth century, such systems used an observer who would decipher a signal from a high tower on a distant hill and then send it on to the next station. The young American republic wanted just such a system along its entire Atlantic coast and offered a prize of \$30,000 for a workable proposal. The framers of this legislation<sup>1</sup> had no way of knowing that when they used the word “telegraph” to refer to this visual semaphore system, they would be offered an entirely new and revolutionary means of communication—electricity.

### The Growth of an Idea

- 2 The idea of using electricity to communicate over distance is said to have occurred to Morse during a conversation aboard ship when he was returning from Europe in 1832. Michael Faraday’s recently invented electromagnet was much discussed by the ship’s passengers, and when Morse came to understand how it worked, he speculated that it might be possible to send a coded message over a wire. While a student at Yale College years before, he had written his parents a letter about how interesting he found the lectures on electricity. Despite what he had learned at Yale, Morse found when he began to develop his idea that he had little real understanding of the nature of electricity, and after sporadic attempts to work with batteries, magnets, and wires, he finally turned for help to a colleague at the University of the City of New York, Leonard D. Gale.
- 3 Gale was a professor of chemistry and familiar with the electrical work of Princeton’s Joseph Henry, a true pioneer in the new field. Well before Morse had his shipboard idea about a telegraph, Henry rang a bell at a distance by opening and closing an electric circuit. In 1831, he had published an article, of which Morse was unaware, that contained details suggesting the idea of an electric telegraph. Gale’s help and his knowledge of this article proved crucial to Morse’s telegraph system because Gale not only pointed out flaws in the system but showed Morse how he could regularly boost the strength of a signal and overcome the distance problems he had encountered by using a relay system Henry had invented. Henry’s experiments, Gale’s assistance, and, soon after, hiring the young technician Alfred Vail were keys to Morse’s success.

### Obstacles and Opportunities

- 4 By December 1837, Morse had enough confidence in his new system to apply for the federal government’s appropriation, and during the next year he conducted demonstrations of his telegraph both in New York and Washington.

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<sup>1</sup>legislation: Telegraph Bill

- 5 However, when the economic disaster known as the Panic of 1837 took hold of the nation and caused a long depression, Morse was forced to wait for better times. It was during this period that Morse visited Europe again and tried not only to secure patent protection overseas but to examine competing telegraph systems in England. . . .
- 6 By 1843, the country was beginning to recover economically, and Morse again asked Congress for the \$30,000 that would allow him to build a telegraph line from Washington to Baltimore, forty miles away. The House of Representatives eventually passed the bill containing the Morse appropriation, and the Senate approved it in the final hours of that Congress’s last session. With President Tyler’s signature, Morse received the cash he needed and began to carry out plans for an underground telegraph line.

### **Realizing a Great Invention**

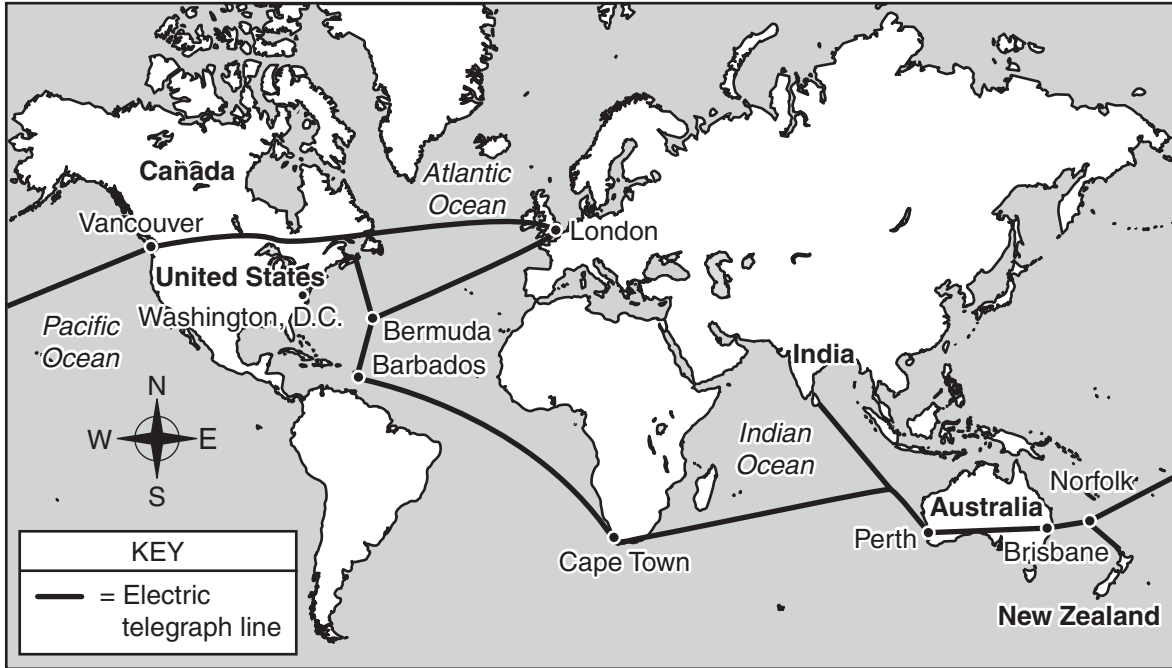
- 7 Morse had hired the ingenious construction engineer Ezra Cornell to lay the pipe carrying the wire, and although Cornell did his job superbly, one of Morse’s partners, Congressman F. O. J. Smith, had purchased wire with defective insulation. Too much time had been wasted laying bad wire, and with the project on a rigid deadline, something had to be done quickly. Cornell suggested that the fastest and cheapest way of connecting Washington and Baltimore was to string wires overhead on trees and poles. The desperate Morse gave the go-ahead, and the line was completed in time for the dramatic and spectacularly successful link between the Supreme Court chamber of the Capitol building and the railroad station in Baltimore.
- 8 Soon, as overhead wires connected cities up and down the Atlantic coast, the dots-and-dashes method<sup>2</sup> that recorded messages on a long moving strip of paper was replaced by the operator’s ability to interpret the code in real time. . . . Telegraph lines soon extended westward, and within Morse’s own lifetime they connected the continents of Europe and America.

“Invention of the Telegraph”—Public Domain/Library of Congress

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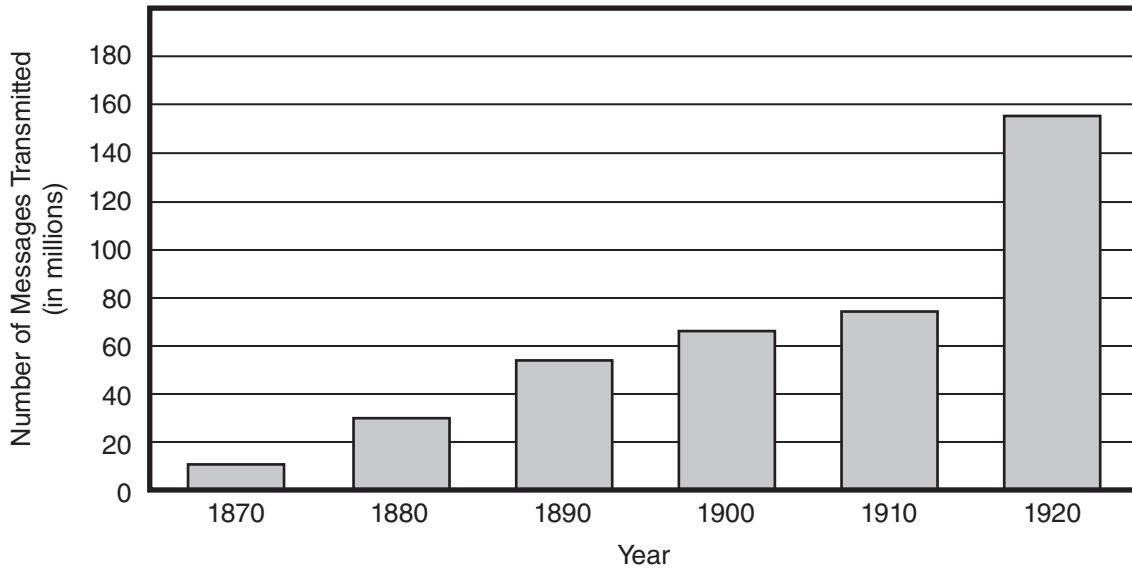
<sup>2</sup>**dots-and-dashes method:** the short and long pulses of Morse code that are sent and received by telegraph operators

BRITISH ALL-RED TELEGRAPH LINE, 1902



The first transatlantic electric telegraph message was sent in 1858, and by 1902 the British All-Red Line connected most of the world.

TELEGRAPH MESSAGES TRANSMITTED, 1870–1920



Source: U.S. Bureau of the Census. *Historical Statistics of the United States, Colonial Times to 1970, Bicentennial Edition, Part 2*. Washington, D.C., 1975.

- 32.** Which statement describes how the author’s use of problem-solution in paragraph 2 contributes to the development of ideas in the passage?
- E.** Morse’s discussion on a ship about Faraday’s electromagnet reminded him of the Yale College lectures on electricity, which he had enjoyed but had not fully understood, inspiring him to learn more about electricity from his colleague Gale.
  - F.** Morse’s discouragement over his lack of knowledge of electricity prompted him to experiment with batteries, magnets, and wires, which led to the development of a new long-distance communication system.
  - G.** Morse’s difficulty in understanding how Faraday’s electromagnet worked was frustrating, and it pushed him to create a system for sending signals over wires.
  - H.** Morse’s longtime fascination was not enough to make up for his lack of knowledge about electricity, so he eventually sought help from Gale.
- 33.** The details of the section “The Growth of an Idea” convey a central idea of the passage by suggesting that
- A.** the collaborative efforts of colleagues resulted in successful communication over a wire.
  - B.** a great deal of interest and work was devoted to understanding how to use electricity to send signals.
  - C.** Faraday’s invention of the electromagnet inspired the invention of the telegraph.
  - D.** colleges like Yale played a great role in making new discoveries about electricity and its applications.
- 34.** Which statement describes how the author’s use of sequencing in paragraph 3 contributes to the overall structure of the passage?
- E.** It shows that several people were simultaneously attempting to create an electric telegraph.
  - F.** It shows how the invention of the electric telegraph depended on information and techniques discovered by others.
  - G.** It shows that multiple means of long-distance communication were being used at the same time.
  - H.** It shows how quickly long-distance communication changed from visual signals to electrical signals.

35. Which sentence is the **best** summary of how Morse obtained the funding necessary to build his telegraph system?
- A. Morse’s application for a federal grant was delayed until 1843, so he spent time traveling in Europe, where he concentrated on obtaining a patent for his system.
  - B. Morse applied for a government grant that required both houses of Congress and the president to pass a bill awarding him \$30,000 for his telegraph project.
  - C. Morse applied for a government appropriation and conducted telegraph demonstrations to show that his system could work, and after a delay caused by a financial depression, Congress approved the \$30,000 appropriation in 1843.
  - D. Working with Gale and Vail allowed Morse to find flaws in Henry’s work and to develop his own ideas before applying for the federal government appropriation.

36. Read this sentence from paragraph 7.

**The desperate Morse gave the go-ahead, and the line was completed in time for the dramatic and spectacularly successful link between the Supreme Court chamber of the Capitol building and the railroad station in Baltimore.**

The words “dramatic” and “spectacularly” in the sentence convey a

- E. sense of relief and fulfillment that the line was finished.
  - F. sense of wonder and celebration that the telegraph line was accomplished.
  - G. feeling of excitement about the future possibilities of the telegraph.
  - H. feeling of confidence about being able to continue the work.
37. How does the graph support the ideas in paragraph 8?
- A. It indicates how welcome the improvement of long-distance communication was in the United States.
  - B. It provides evidence of the dramatic increase in the number of telegraph messages as Morse’s system expanded across the United States.
  - C. It reveals that by the twentieth century millions of people had used the telegraph despite earlier hesitations about the system.
  - D. It shows how improvements that allowed Morse code to be read in real time made relaying telegraph messages faster and increased the system’s usage.

- 38.** The idea that, in the mid-nineteenth century, the United States was mostly unaware of the possibilities of electricity is illustrated in the passage **mainly** through the
- E.** description of the government’s initial desire to expand a semaphore signaling system that used either flags or lights along the Atlantic Coast.
  - F.** delay by the House of Representatives to pass the bill funding Morse’s telegraph line six years after he first applied for the appropriation.
  - G.** discussions of the newly invented electromagnet that sparked the idea of sending codes through wires.
  - H.** description of how an electric circuit could be closed to ring a bell at a distance.
- 39.** With which statement would the author **most likely** agree?
- A.** Morse’s telegraph was successful because the wires were strung aboveground rather than underground as originally planned.
  - B.** Understanding the importance of Morse’s telegraph requires detailed knowledge of electrical systems.
  - C.** The implementation of Morse’s telegraph system was overly influenced by economic factors.
  - D.** Morse’s invention of the telegraph made a great stride toward better connecting people across the United States and across the world.
- 40.** How does the map provide additional support for a central idea of the passage?
- E.** by demonstrating that Morse’s telegraph system greatly exceeded the limitations of previous long-distance communication systems
  - F.** by indicating that Morse was lacking foresight by seeking a patent only in North America
  - G.** by proving that Gale’s advice helped Morse extend the telegraph’s range much farther than first thought possible
  - H.** by showing that the Morse telegraph had a surprisingly immense influence across the world



# Snowy Mountains

by John Gould Fletcher

- Higher and still more high,  
Palaces made for cloud,  
Above the dingy city-roofs  
Blue-white like angels with broad wings,  
5 Pillars of the sky at rest  
The mountains from the great plateau  
Uprise.
- But the world heeds them not;  
They have been here now for too long a time.  
10 The world makes war on them,  
Tunnels their granite cliffs,  
Splits down their shining sides,  
Plasters their cliffs with soap-advertisements,  
Destroys the lonely fragments of their peace.
- 15 Vaster and still more vast,  
Peak after peak, pile after pile,  
Wilderness still untamed,  
To which the future is as was the past,  
Barrier spread by Gods,  
20 Sunning their shining foreheads,  
Barrier broken down by those who do not need  
The joy of time-resisting storm-worn stone,  
The mountains swing along  
The south horizon of the sky;  
25 Welcoming with wide floors of blue-green ice  
The mists that dance and drive before the sun.

“Snowy Mountains” by John Gould Fletcher—Public Domain

41. The description in the first stanza (lines 1–7) helps establish a central idea of the poem by
- A. comparing the length of time the mountains have existed with the length of time the city has existed.
  - B. contrasting the grandeur of the mountains with the structures in the city below them.
  - C. implying that the mountains are a source of inspiration to the people in the city below.
  - D. suggesting that the mountains are larger than the people in the city realize.

42. Read line 5 from the poem.

**Pillars of the sky at rest**

The line helps develop the theme of the poem by suggesting that the mountains

- E. serve a noble and supportive purpose in the world.
  - F. attract the clouds with their strength and permanence.
  - G. remain untamed through the ages.
  - H. provide protection for the people.
43. How does isolating the word “Uprise” in line 7 affect the meaning of the poem?
- A. It creates a contrast between the great plateau and the city buildings.
  - B. It reveals the similarity between the tall buildings in the city and the tall mountains on the horizon.
  - C. It creates a vision of the region before people developed the land.
  - D. It emphasizes that the mountains dominate the landscape.
44. Which line from the poem **best** supports the idea that people have sacrificed priceless natural beauty in order to make a profit?
- E. “Above the dingy city-roofs” (line 3)
  - F. “The world makes war on them,” (line 10)
  - G. “Tunnels their granite cliffs,” (line 11)
  - H. “Plasters their cliffs with soap-advertisements,” (line 13)

45. How does the poet develop the speaker's point of view in the second stanza (lines 8–14)?
- A. by describing images of the mountains' awe-inspiring size and strength
  - B. by illustrating the differences among the various ways humans can affect the natural environment
  - C. by criticizing society for taking careless, harmful courses of action against nature
  - D. by demonstrating how the mountains and the people are able to benefit from each other
46. Which detail from the poem reflects the speaker's view that people often fail to appreciate what is familiar?
- E. "The mountains from the great plateau" (line 6)
  - F. "They have been here now for too long a time." (line 9)
  - G. "Splits down their shining sides," (line 12)
  - H. "To which the future is as was the past," (line 18)

47. Read lines 21–22 from the poem.

**Barrier broken down by those who do not need  
The joy of time-resisting storm-worn stone,**

How do the lines help convey the speaker's point of view?

- A. They suggest that the speaker wants to remove the obstacles that prevent others from experiencing the wonders of nature.
- B. They reveal the speaker's opinion that some people are too busy to appreciate natural beauty.
- C. They reflect the speaker's dismay that people destroy the natural landscape without understanding the ramifications of their actions.
- D. They explain that the speaker is confident that nature will never be fully destroyed by people.

48. How do the details in the third stanza (lines 15–26) **most** contribute to the development of a theme of the poem?
- E. by reflecting nature’s capacity to resist change
  - F. by showing that nature is capable of influencing human will
  - G. by exposing how a lack of awareness leads to nature’s ruin
  - H. by explaining why people must respect nature

49. Read lines 23–26 from the poem.

**The mountains swing along  
The south horizon of the sky;  
Welcoming with wide floors of blue-green ice  
The mists that dance and drive before the sun.**

The personification in these concluding lines of the poem suggests that the mountains are

- A. gracious hosts who are untroubled by the actions of people.
- B. unaware of their coming destruction.
- C. lively entertainers who are amused by the everyday concerns of people.
- D. too proud to reveal their pain.

## Excerpt from “The Past and the Future of the Earth’s Oldest Trees”

by Alex Ross

- 1 About forty-five hundred years ago, not long after the completion of the Great Pyramid at Giza, a seed of *Pinus longaeva*, the Great Basin bristlecone pine, landed on a steep slope in what are now known as the White Mountains, in eastern California. The seed may have travelled there on a gust of wind, its flight aided by a winglike attachment to the nut. Or it could have been planted by a bird known as the Clark’s nutcracker, which likes to hide pine seeds in caches; nutcrackers have phenomenal spatial<sup>1</sup> memory and can recall thousands of such caches. This seed, however, lay undisturbed. On a moist day in fall, or in the wake of melting snows in spring, a seedling appeared above ground—a stubby one-inch stem with a tuft of bright-green shoots.
- 2 Most seedlings die within a year; the mortality rate is more than ninety-nine percent. The survivors are sometimes seen growing in the shadow of a fallen tree. The landscape of the Ancient Bristlecone Pine Forest, as this area of the White Mountains is called, is littered with fragments of dead trees—trunks, limbs, roots, and smaller chunks. *Pinus longaeva* grows exclusively in subalpine regions of the Great Basin, which stretches from the eastern slopes of the Sierra Nevada to the Wasatch Range, in Utah. Conditions are generally too arid for the dead wood to rot; instead, it erodes, sanded down like rock. The remnants may harbor nutrients and fungi that help new trees grow. Bristlecones rise from the bones of their ancestors—a city within a cemetery.
- 3 Coast redwoods and giant sequoias, California’s gargantuan world-record-holding trees, can grow fifty feet or more in their first twenty years. Bristlecones rise agonizingly slowly. After four or five years, the seedling on the steep slope would have been just a few inches higher, sprouting needles in place of the embryonic shoots. The needles are a deep green, tough, resinous, and closely bunched in groups of five. On a mature tree, they live for fifty years or more. Decades may have passed before the tree was human height, and decades more before it resembled a conventional pine. Bristlecone saplings grow straight up, with relatively sparse foliage, looking like undernourished Christmas trees. After a few hundred years—by which time the Old Kingdom of Egypt had fallen—it was probably forty or fifty feet in height.
- 4 Many tree species live for hundreds of years. A smaller but not inconsiderable number, including the sequoias and certain yews, oaks, cypresses, and junipers, survive for thousands. Once a bristlecone has established itself in the unforgiving conditions of the White Mountains, it can last almost indefinitely. The trees tend to grow some distance from one another, so fires almost never destroy an entire stand. Because only a few other plant species can handle the dry, cold climate, the bristlecones face little competition. Unlike most plants, they tolerate dolomite soil, which is composed of a chalky type of limestone that is heavily alkaline and low in nutrients. As for insect threats, bristlecone wood is so dense that mountain-pine beetles and other pests can rarely burrow their way into it.
- 5 Empires rose and fell; wars raged; . . . and the tree from 2500 B.C. continued its implacable slow-motion existence, adding about two-hundredths of an inch to the diameter of its trunk each

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<sup>1</sup>**spatial:** relating to physical space

year. Minute changes in the tree-ring record make bristlecones an exceptionally useful source of data about changing conditions on Earth. When rains are heavier than normal, the rings widen. When volcanic eruptions cause global cooling, frost rings make the anomaly<sup>2</sup> visible. . . .

- 6 As the millennia go by, bristlecones become contorted and wraithlike.<sup>3</sup> The main stem, or leader, dies back. Entire branches, even the trunk itself, become fossils. At first glance, the tree may look dead. Such is the case of the forty-five-hundred-year-old tree that clings to life near the tourist path that now runs through the Ancient Bristlecone Pine Forest. Spears of dead wood jut into the air. The trunk is a marbled hulk stripped of bark, like driftwood thrown from a vanished ocean. A ribbon of live bark runs up one side, funneling water and nutrients to clumps of green needles high above. All told, the tree is an unprepossessing specimen; most people march past it without giving it a second glance. . . .
- 7 . . . No two super-elderly trees look alike, to the point where they have acquired the characteristics of individuals. Trees are prone to anthropomorphism; we project our dreams and our anxieties onto them. Bristlecones have been called elders, sentinels, sages. The possibility that climate change will cause their extinction has inspired a spate<sup>4</sup> of alarmed news stories, although tree scientists tend to discount the idea that the bristlecones are in immediate danger. They have survived any number of catastrophes in the past; they may survive humanity.

From "The Past and the Future of the Earth's Oldest Trees" by Alex Ross from THE NEW YORKER, January 20, 2020. Copyright © 2020 by Condé Nast. All rights reserved.

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<sup>2</sup>**anomaly:** oddity

<sup>3</sup>**wraithlike:** ghostly

<sup>4</sup>**spate:** sudden abundance

50. What is the effect of comparing groups of bristlecone pines to "a city within a cemetery" (paragraph 2)?
- E. It illustrates that the new tree's appearance is markedly different from that of mature bristlecone pines.
  - F. It emphasizes the new tree's ability to use resources left by prior generations of bristlecone pines.
  - G. It highlights the tree's capacity for a long life if it is able to survive to maturity.
  - H. It reveals that the tree's dense growth patterns are unusual in arid conditions.

51. In paragraph 4, the idea that the bristlecone pine can withstand difficult conditions is illustrated **mainly** through
- A. a comparison of the bristlecone pine with similar trees that are known for their long lives.
  - B. a description of specific qualities of the bristlecone pine that make it suited to its environment.
  - C. an explanation of why the White Mountains are the best place for the bristlecone pine to grow.
  - D. an examination of why the bristlecone pine has few competitors in the White Mountains.

52. Read this sentence from paragraph 5.

**Empires rose and fell; wars raged; . . . and the tree from 2500 B.C. continued its implacable slow-motion existence, adding about two-hundredths of an inch to the diameter of its trunk each year.**

The sentence contributes to the development of ideas in the excerpt by

- E. emphasizing the bristlecone pine's precise growth pattern.
  - F. suggesting that things that seem well established face threats.
  - G. describing the pace of the life cycle of the bristlecone pine.
  - H. explaining the reason for the bristlecone pine's longevity.
53. Which claim is **best** supported by the details in paragraph 5 about the bristlecone pine's tree-ring record?
- A. The bristlecone pine must be protected from extinction so that there is a record of changing Earth conditions.
  - B. The structure of the bristlecone pine allows scientists to predict changing Earth conditions over time.
  - C. The slow growth process of the bristlecone pine allows it to survive in spite of changing Earth conditions.
  - D. The bristlecone pine can be used to gather information on changing Earth conditions because of its long life.

54. The phrases “clings to life” and “stripped of bark” in paragraph 6 are used to highlight
- E. that the tree is fragile and needs help to avoid becoming extinct.
  - F. how the tree can be misunderstood because of its appearance.
  - G. how the tree interests observers with its unusual appearance.
  - H. that the tree manages to survive even when partially fossilized.
55. The details in paragraph 7 convey a central idea of the excerpt by suggesting that
- A. the success of the bristlecone pine lies in its ability to resist climate change.
  - B. the uncommon appearance of the bristlecone pine is related to its ability to survive.
  - C. the attachment that humans have to the bristlecone pine is understandable.
  - D. the longevity of the bristlecone pine continues to encourage experts.
56. What is the **best** summary of the bristlecone pine’s life cycle?
- E. The bristlecone pine takes root as a stubby seedling in the mountains. Over time, it grows slowly in a hostile environment with alkaline soil that ensures little competition from other trees.
  - F. The bristlecone pine grows up slowly from the fragments of its dead ancestors. Over time, it begins to become contorted in appearance but continues to funnel water and nutrients to its stem.
  - G. The bristlecone pine grows slowly in an environment hostile to other trees. Over time, its trunk and some branches fossilize, but it funnels water and nutrients to other parts that are still alive.
  - H. The bristlecone pine grows only in one location in the mountains. Over time, it develops sparse foliage that fossilizes slowly, but the trunk and branches stay alive, as revealed by ribbons of live bark.
57. Throughout the excerpt, the author conveys his point of view **mainly** by
- A. sharing details about the qualities of the bristlecone pine that make it an unusual tree.
  - B. comparing the bristlecone pine to global empires that lasted thousands of years before falling.
  - C. explaining the way the seemingly sickly appearance of the bristlecone pine contrasts with its ability to survive.
  - D. arguing that the bristlecone pine has survived past threats to its survival and will continue to thrive.



# PART 2 — MATHEMATICS

## 57 QUESTIONS

### IMPORTANT NOTES

- (1) Formulas and definitions of mathematical terms and symbols are **not** provided.
- (2) Diagrams other than graphs are **not** necessarily drawn to scale. Do not assume any relationship in a diagram unless it is specifically stated or can be determined from the information given.
- (3) Assume that a diagram is in one plane unless the question specifically states that it is not.
- (4) Graphs are drawn to scale. Unless stated otherwise, you can assume relationships according to appearance. For example, lines on a graph that appear to be parallel can be assumed to be parallel. This is also true for concurrent lines, straight lines, collinear points, right angles, etc.
- (5) Reduce (simplify) all fractions to lowest terms.

### GRID-IN QUESTION NOTES

- (1) For each grid-in question, write your answer at the top of the grid.
- (2) Begin recording your answer in the columns on the far left.
- (3) Fill in the circle under the box that matches the number or symbol you wrote. Leave the negative sign bubble blank if your answer is positive.

(Answer:  $-1.5$ )

	-	1	.	5	
Negative sign →	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	← Decimal point
	0	0	0	0	
	1	1	1	1	
	2	2	2	2	
	3	3	3	3	
	4	4	4	4	
	5	5	<input checked="" type="radio"/>	5	
	6	6	6	6	
	7	7	7	7	
	8	8	8	8	
	9	9	9	9	

(Answer:  $3.2$ )

	3	.	2		
Negative sign →	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	← Decimal point
	0	0	0	0	
	1	1	1	1	
	2	2	<input checked="" type="radio"/>	2	
	3	3	3	3	
	4	4	4	4	
	5	5	5	5	
	6	6	6	6	
	7	7	7	7	
	8	8	8	8	
	9	9	9	9	

CONTINUE TO THE NEXT PAGE ►

# GRID-IN QUESTIONS

## QUESTIONS 58–62

**DIRECTIONS:** Solve each problem. On the answer sheet, write your answer in the boxes at the top of the grid. Start on the left side of each grid. Print only one number or symbol in each box. Under each box, fill in the circle that matches the number or symbol you wrote above.

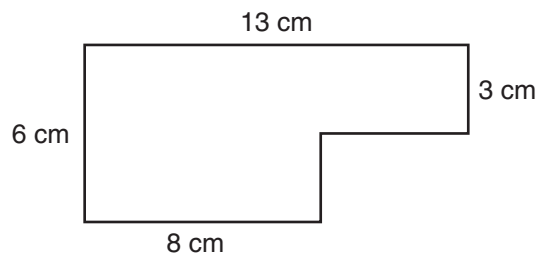
- Do not fill in a circle under an unused box.
- Do not leave a box blank in the middle of an answer.

58.  $\frac{3}{5}(2x + 5) - 2x$

After the expression above is simplified, what is the coefficient of  $x$ , expressed as a decimal?

59. Two number cubes have sides labeled 1 through 6. Both number cubes are rolled. How many different outcomes will have a sum of 6?

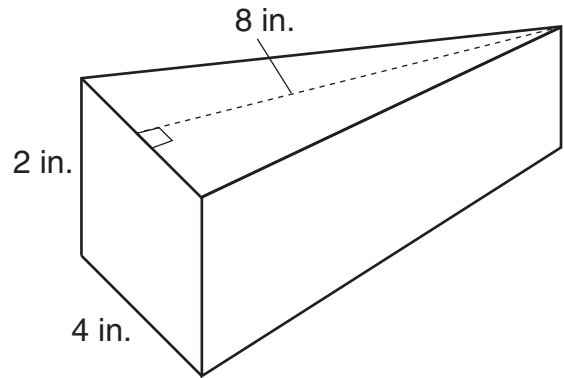
60.



The figure above shows a scale drawing of a garden, where 1 centimeter represents 2.5 meters. What is the perimeter of the actual garden in meters?

- 61.** At one location, the temperature increased from  $-7^{\circ}\text{F}$  to  $4^{\circ}\text{F}$  between 5:00 a.m. and 9:00 a.m. By 11:00 a.m., the temperature was 3.5 times the 9:00 a.m. temperature. What was the total increase in temperature between 5:00 a.m. and 11:00 a.m., in degrees Fahrenheit?

- 62.** The figure below is a triangular prism. The lateral sides are rectangles.



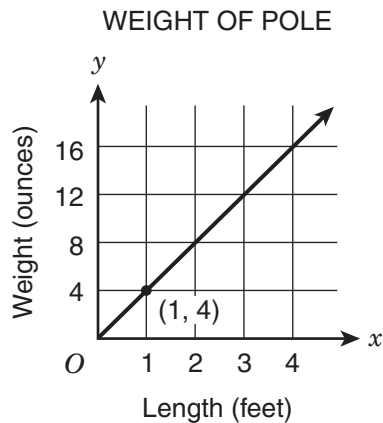
What is the volume of the figure, in cubic inches?

# MULTIPLE CHOICE QUESTIONS

## QUESTIONS 63–114

**DIRECTIONS:** Solve each problem. Select the answer from the choices given. Mark the letter of your answer on the answer sheet. When you are solving problems, you can write in the test booklet or on the scrap paper given to you.

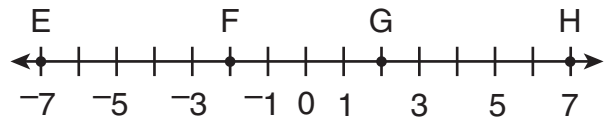
- 63.** This graph shows  $y$ , the weight of a pole of length  $x$ .



What is represented by the point with coordinates  $(1, 4)$ ?

- A.** The unit rate is 4 ounces per foot.
- B.** The  $y$ -intercept is 4.
- C.** A pole 4 feet long weighs 1 ounce.
- D.** The length increases 4 feet for each 1 ounce of weight.

- 64.** The number line shows points E, F, G, and H.



Which point represents the sum of  $2.5 + (-4.5)$ ?

- E.** point E
- F.** point F
- G.** point G
- H.** point H

- 65.** If  $\frac{9}{2x} = \frac{3y}{8}$ , where  $x \neq 0$  and  $y \neq 0$ , what is the product of  $x$  and  $y$ ?

- A.** 4
- B.** 6
- C.** 12
- D.** 16

---

**66.** A car dealership is having a sale where all cars have a 12% discount. What is the discounted price of a car that originally cost \$15,600?

- E.** \$13,728
- F.** \$14,300
- G.** \$14,400
- H.** \$15,588

---

**67.**

$$4\frac{2}{3} \div 2\frac{1}{2} =$$

- A.**  $\frac{15}{28}$
- B.**  $1\frac{13}{15}$
- C.**  $2\frac{1}{3}$
- D.**  $3\frac{1}{3}$

**68.** In a sports league, each team has 36 players and 3 coaches. There are also a number of team assistants. The ratio of team assistants to players is  $\frac{1}{6}$ . What is the ratio of coaches to assistants?

- E.**  $\frac{1}{4}$
- F.**  $\frac{1}{2}$
- G.**  $\frac{2}{3}$
- H.**  $\frac{5}{6}$

- 
- 69.** Lena is building a fence. She will need to dig holes to help support the posts that hold up the fence. The holes need to have a depth of  $3\frac{1}{3}$  feet below the ground. Each post is 10 feet long. What is the height of the part of the post that is above the ground?
- A.**  $6\frac{2}{3}$  feet
- B.**  $7\frac{1}{3}$  feet
- C.** 10 feet
- D.**  $13\frac{1}{3}$  feet

---

**70.**  $p + 2r = r(p + 1) + 1$

In the equation above, if  $r = 2$ , what is the value of  $p$ ?

- E.** 0
- F.** 1
- G.** 2
- H.** 3

- 71.** Karen reads at the rate of 60 pages per day. Martina reads 25% more pages per day than Karen. If the two students begin 1,500-page reading assignments on the same day, how many days sooner will Martina complete the assignment than Karen?

- A.** 4
- B.** 5
- C.** 7
- D.** 15

- 
- 72.** Claire is running on a circular track. She has already run 650 meters. Each lap around the track is a distance of 120 meters. Her goal is to run at least 2,500 meters in all. How many more laps does she need to complete in order to reach her goal?

- E.** 5
- F.** 6
- G.** 15
- H.** 16

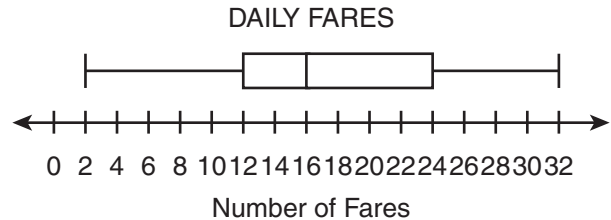
**73.** A company with 200 employees grew in size by 25% between 2005 and 2010. The company grew again by 10% between 2010 and 2015. What was the total number of employees in 2015?

- A.** 235
- B.** 260
- C.** 270
- D.** 275

**74.** A bowl contains 12 green candies, 4 yellow candies, and some red candies. The probability of choosing a green candy at random is twice as great as the probability of choosing a red candy at random. What is the probability of choosing a yellow candy at random?

- E.**  $\frac{2}{11}$
- F.**  $\frac{2}{9}$
- G.**  $\frac{1}{4}$
- H.**  $\frac{3}{11}$

**75.** A taxi driver recorded the number of fares each day for one month. The box plot displays the data.



Based on the box plot, which statement is a correct interpretation of the data?

- A.** The data point 2 is an outlier.
- B.** The mean of the data is 16.
- C.** The interquartile range (IQR) of the data is 30.
- D.** On about 25% of the days, there were between 12 and 16 fares.

76. Serena was studying the number of water stations for different lengths of races. The table below shows the data she collected.

WATER STATIONS IN RACES

Length of Race (mi)	Number of Water Stations
3	2
12	8
18	12

Which equation represents the relationship between the length of the race,  $x$  miles, and the number of water stations,  $y$ ?

- E.  $y = \frac{2}{3}x$
- F.  $y = \frac{3}{2}x$
- G.  $y = x + 6$
- H.  $y = x - 1$

77. Centerville will hold a vote on whether to build a new park. The town council surveyed a random sample of 200 residents to determine whether they would be in favor of building this park. The table shows the results of the survey.

SURVEY RESULTS

Opinion	Number of Residents
Yes	142
No	38
Undecided	20

The mayor estimates that half the undecided voters will vote in favor of building the park. Based on the survey results, if the mayor is correct, how many of the 24,100 voters will be in favor of building the park?

- A. 17,111
- B. 18,316
- C. 19,401
- D. 19,521



---

78.  $-\frac{1}{49}$ ,  $-49$ ,  $-\frac{1}{7}$ ,  $-1$

Which number shown above is the **greatest**?

E.  $-\frac{1}{49}$

F.  $-49$

G.  $-\frac{1}{7}$

H.  $-1$

---

79. What decimal is equivalent to  $-\frac{13}{11}$ ?

A.  $-1.18$

B.  $-1.\overline{118}$

C.  $-1.\overline{18}$

D.  $-1.\overline{81}$

80. Each loaf of bread a baker makes requires  $\frac{1}{5}$  ounce of salt. How many loaves can be made if 40 ounces of salt are used?

E. 8

F. 20

G. 45

H. 200

---

81. What is the value of  $\frac{\left(1\frac{5}{7} - 1\frac{6}{7}\right)}{\left(3\frac{4}{7} - 3\frac{6}{7}\right)}$ ?

A.  $-\frac{1}{2}$

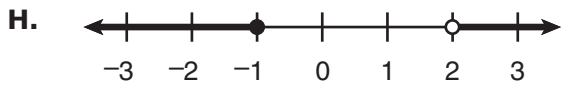
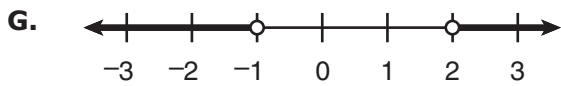
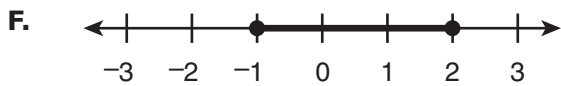
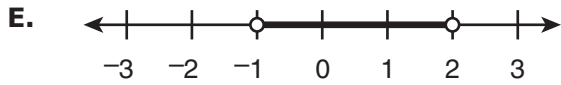
B.  $-\frac{1}{7}$

C.  $\frac{1}{7}$

D.  $\frac{1}{2}$

- 82.** Which number line represents the values of  $x$  that satisfy the inequality

$$-5 \leq 1 - 3x \leq 4?$$



- 83.** If 1 sind = 0.75 plunk, how many sinds are equivalent to 8 plunks, rounded to the nearest hundredth?

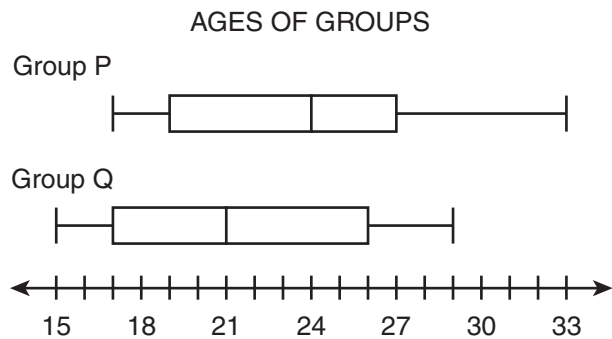
- A.** 1.33
- B.** 6.00
- C.** 7.25
- D.** 10.67

- 84.** Simplify:

$$8x - (7 + 2.5x) + 2$$

- E.**  $5.5x - 9$
- F.**  $5.5x - 5$
- G.**  $10.5x - 9$
- H.**  $10.5x - 5$

- 85.** A community center has two 30-member exercise groups. The director recorded the ages of each group's members in the box plots.



Which statement about the two groups can be verified based on the box plots?

- A.** Both groups have at least one member who is exactly 29 years old.
- B.** Group P has more members who are at least 17 years old than Group Q has.
- C.** Both groups have an equal number of members who are between 21 and 24 years old.
- D.** Group Q has fewer members who are between 19 and 27 years old than Group P has.

- 86.** Jar Q contains 12 balls, and Jar R contains 8 balls. The probability of drawing a yellow ball at random from Jar Q is  $\frac{1}{3}$ . The probability of drawing a yellow ball at random from Jar R is  $\frac{3}{4}$ . All the balls are poured into an empty jar, Jar S. What is the probability of drawing a yellow ball at random from Jar S?

- E.**  $\frac{1}{4}$
- F.**  $\frac{1}{3}$
- G.**  $\frac{1}{2}$
- H.**  $\frac{4}{7}$

87.

GIA'S MIX

Snack	Number in Bag
Pretzels	12
Raisins	9

Gia and her friends counted the numbers of pretzels and raisins in their snack mix. The table above shows the numbers in Gia's mix. Which other mix has a ratio of pretzels to raisins in the same proportional relationship as Gia's mix?

A. ADELE'S MIX

Snack	Number in Bag
Pretzels	6
Raisins	18

B. CARL'S MIX

Snack	Number in Bag
Pretzels	15
Raisins	12

C. ISABEL'S MIX

Snack	Number in Bag
Pretzels	18
Raisins	15

D. TREVON'S MIX

Snack	Number in Bag
Pretzels	16
Raisins	12

88. If  $y = 4x$ , what is the value of  $3y + 2(3y + 5) - x$  in terms of  $x$ ?

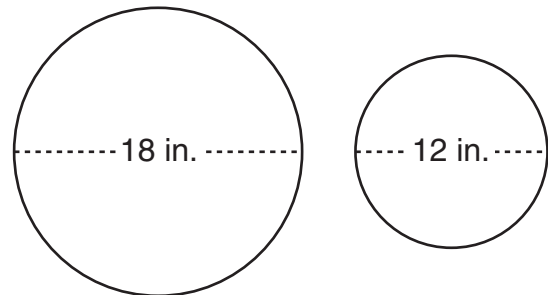
E.  $8x + 10$

F.  $32x + 10$

G.  $35x + 10$

H.  $36x + 10$

89. Two circular plates have the dimensions shown.



What is the difference between the areas of the two plates, in square inches?

A.  $6\pi$

B.  $9\pi$

C.  $45\pi$

D.  $180\pi$

---

**90.** If  $x = -4$ , what is the sum of  $x$  and 10% of  $|x|$ ?

- E.**  $-4.4$
- F.**  $-3.6$
- G.**  $0.4$
- H.**  $4.4$

---

**91.** The volume of a cube is 512 cubic centimeters. What is the length, in centimeters, of **one** edge of this cube?

- A.** 8
- B.**  $42\frac{2}{3}$
- C.**  $85\frac{1}{3}$
- D.** 128

**92.** The high temperature on Monday was  $x^\circ$  F. On Tuesday, the high temperature was  $84^\circ$  F, which was a 5% increase from Monday's high temperature. On Wednesday, the high temperature was 10% lower than it was on Monday. How much lower was the high temperature on Wednesday than the high temperature on Monday?

- E.**  $4.0^\circ$  F
- F.**  $8.0^\circ$  F
- G.**  $8.4^\circ$  F
- H.**  $8.8^\circ$  F

---

**93.** The integers  $(n - 1)$ ,  $n$ , and  $(n + 1)$  are factors of 168. What is the **greatest** possible value of  $n$ ?

- A.** 3
- B.** 7
- C.** 14
- D.** 84

---

**94.** Raoul gave two musical performances. His second performance occurred 86 days after his first performance. If Raoul's second performance was on a Tuesday, on what day of the week was his first performance?

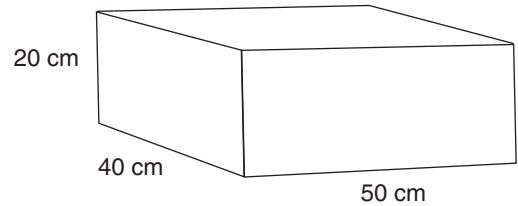
- E.** Sunday
- F.** Monday
- G.** Wednesday
- H.** Thursday

---

**95.** Michael received a check for \$213 for working 20 hours at his part-time job. The amount on the check was his total pay after \$32 in taxes was deducted. What was Michael's hourly pay rate before taxes were deducted?

- A.** \$9.05
- B.** \$10.65
- C.** \$12.25
- D.** \$21.35

**96.**



What is the total surface area, in square centimeters, of the closed box shown above?

- E.** 3,800
- F.** 5,600
- G.** 7,600
- H.** 40,000

---

**97.** The value of a particular car decreases at a constant rate. If the car is worth \$15,000 three years after its original purchase date and \$10,000 five years after its original purchase date, what was the value of the car on its original purchase date?

- A.** \$18,000
- B.** \$20,000
- C.** \$22,500
- D.** \$25,000

---

**98.** A bag contains 2 green, 4 blue, and 3 yellow disks. Alana selects 4 disks from the bag at random, one at a time, without replacing them. What is the probability that she selects all 4 blue disks?

**E.**  $\frac{8}{2,187}$

**F.**  $\frac{1}{126}$

**G.**  $\frac{256}{6,561}$

**H.**  $\frac{16}{9}$

---

**99.** Jevon earns  $\frac{1}{2}\%$  per year on the money in his savings account. Which expression is **not** another way to write  $\frac{1}{2}\%$ ?

**A.**  $\frac{0.005}{100}$

**B.**  $\frac{\frac{1}{2}}{100}$

**C.**  $\frac{5}{1,000}$

**D.**  $\frac{1}{200}$

**100.** A community garden had 50 members in 2001. In each of the next three years, the number of members increased by 40% over the number of members from the previous year. How many members were there in 2004? (Round to the nearest whole number.)

**E.** 70

**F.** 98

**G.** 110

**H.** 137

---

**101.** Which inequality is equivalent to  $6x - 20 < 5x - 2(5 - 3x)$ ?

**A.**  $x < 16$

**B.**  $x < \frac{5}{2}$

**C.**  $x < -2$

**D.**  $x > -2$

**102.** A box contains a total of 30 paper clips with colors in the ratio red:white:blue = 2:5:3. Suppose that one paper clip of each color is removed from the box and not replaced. What is the probability that the next paper clip chosen will be blue?

**E.**  $\frac{5}{27}$

**F.**  $\frac{2}{7}$

**G.**  $\frac{8}{27}$

**H.**  $\frac{3}{10}$

**103.** The least positive integer evenly divisible by the first 6 positive integers is 60. What is the least positive integer evenly divisible by the first 8 positive integers?

**A.** 1,680

**B.** 840

**C.** 480

**D.** 420

**104.** Three different colors of paint are available to paint the window frame, the door, and the wall of a house. If no two parts of the house may be painted the same color, how many different ways are there to paint the three parts of the house?

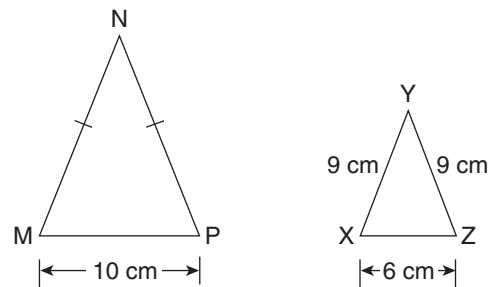
**E.** 3

**F.** 6

**G.** 9

**H.** 27

**105.**



Triangle MNP is similar to triangle XYZ, and  $MN = NP$ . What is the perimeter of triangle MNP?

**A.** 25 cm

**B.** 30 cm

**C.** 36 cm

**D.** 40 cm



---

**106.** Suppose that  $w$ ,  $x$ ,  $y$ , and  $z$  are integers, none of which are zero. Under which set of conditions would the product  $x^2yz^3|w|$  **always** be positive?

- E.**  $x$  is positive and  $w$  is positive.
- F.**  $x$  is negative and  $w$  is negative.
- G.**  $y$  is negative and  $z$  is negative.
- H.**  $x$  and  $y$  are negative, and  $z$  and  $w$  are positive.

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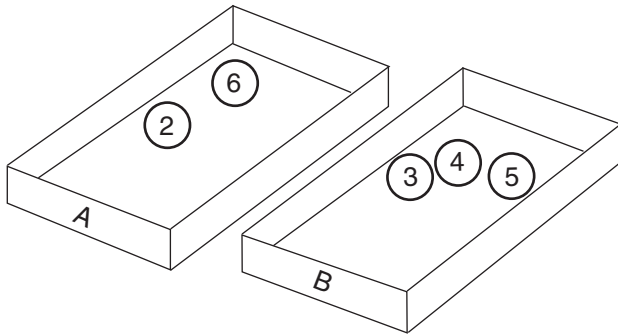
**107.** Chris has 1 red shirt, 2 white shirts, and 3 black shirts. Chris picks a shirt at random. Without putting the first shirt back, he picks a second shirt at random. What is the probability that the first shirt is black and the second shirt is red?

- A.**  $\frac{1}{12}$
- B.**  $\frac{1}{10}$
- C.**  $\frac{1}{5}$
- D.**  $\frac{7}{10}$

**108.** Rita used 125 small solid cubes to build a large solid cube. The measure of each edge of the small cubes equals 1 inch. What is the measure of each edge of the large cube, in inches?

- E.** 5
- F.** 25
- G.** 41.33
- H.** 125

109.



Five numbered balls are placed in two boxes as shown in the figure above. Davina picks one ball at random from Box B and places it in Box A. Then Yusuf picks one ball from Box A without looking. What is the probability that Yusuf will pick a ball with an odd number?

- A.  $\frac{2}{9}$
- B.  $\frac{1}{3}$
- C.  $\frac{2}{5}$
- D.  $\frac{2}{3}$

110. Which graph represents the solution to

$$|x + 1| \geq 2?$$

- E. 

A number line from -3 to 3 with tick marks at every integer. There are solid black dots at -3 and 1. A thick black line segment connects these two dots.
- F. 

A number line from -3 to 3 with tick marks at every integer. There are solid black dots at -1 and 1. Thick black lines extend from each dot to the left and right ends of the number line.
- G. 

A number line from -3 to 3 with tick marks at every integer. There are solid black dots at -3 and 1. Thick black lines extend from each dot to the left and right ends of the number line.
- H. 

A number line from -3 to 3 with tick marks at every integer. There are solid black dots at -3 and 3. Thick black lines extend from each dot to the left and right ends of the number line.

111. A rectangular kitchen floor is 12 feet long and 7.5 feet wide. It will be covered completely with new square tiles measuring 0.75 foot on each side. How many tiles will cover the floor?

- A. 68
- B. 78
- C. 120
- D. 160

---

**112.** Typically, an amusement park sells 3 times as many tickets on Sunday as on any weekday, and 4 times as many tickets on Saturday as on Sunday. If the number of tickets sold on Saturday and Sunday totaled 30,000, how many tickets are expected to be sold on the following Monday?

- E.** 2,000
- F.** 2,500
- G.** 3,000
- H.** 4,285

**113.** A rectangular field had a length of 80 meters and a width of 50 meters. The field was recently enlarged, with the length increased by 15% and the width increased by 10 meters. By what percentage was the area of the field increased?

- A.** 26.5%
- B.** 35%
- C.** 38%
- D.** 42.5%

---

**114.** If  $x$  and  $y$  are both negative integers with  $x < y$ , which expression has the **least** value?

- E.**  $x^2y$
- F.**  $xy^2$
- G.**  $-x^2y$
- H.**  $-xy^2$

THIS IS THE END OF THE TEST.  
IF TIME REMAINS, YOU SHOULD CHECK  
YOUR ANSWERS. BE SURE THAT THERE  
ARE NO STRAY MARKS, PARTIALLY  
FILLED ANSWER CIRCLES, OR  
INCOMPLETE ERASURES ON YOUR  
ANSWER SHEET. ■

## Form B

# Sample Test – English Language Arts Explanations of Correct Answers

### REVISING/EDITING PART A

1. The question asks for the **best** way to combine the sentences.
  - A. Incorrect. Although the option combines the sentences in a way that accurately reflects the meaning of each individual sentence, the combined sentence is a string of clauses that do not effectively cohere. Because it is poorly structured, the combined sentence does not clarify the relationship of ideas as effectively as the correct response does. The sentence incorrectly uses “but tourists,” and “which cost” modifies “the space station” but does not modify the trip. Compared with the correct response, the combined sentence in this option is also imprecise and unnecessarily wordy.
  - B. **CORRECT.** The option uses a complex sentence to present ideas clearly and precisely, and it shows the relationship between the ideas in the original sentences. In the first part of the sentence, the conjunction “and” correctly joins the first and second sentences by indicating a relationship, rather than a contrast, between the two. In the second part of the sentence, the conjunction “but” adds additional emphasis to the fact that while tourists will be allowed to visit the space station, the cost of the trip will likely prohibit most people from visiting.
  - C. Incorrect. Although the option combines the sentences in a way that accurately reflects the meaning of each individual sentence, the combined sentence is a string of clauses that do not effectively cohere. Because it is so poorly structured, the combined sentence does not clarify the relationship of ideas as effectively as the correct response does. Compared with the correct response, the combined sentence in this option is also imprecise and unnecessarily wordy.
  - D. Incorrect. The combination of the sentences contains an illogical relationship between ideas with the statement that tourists will be allowed to pay for visits to the space station *because* the cost is \$52–\$58 million round trip. The connection between the idea that “tourists will soon be allowed to pay for visits” and the subsequent “therefore few people will be able to take advantage of the opportunity” is also illogical.

2. The question asks for the identification of the sentence that has an error in its construction and should be revised.
- E. Incorrect. There are no errors in the structure of sentence 1. The clause “who played in the Long Island area at the time” correctly modifies the noun “New York Nets.” “Who” is the correct relative pronoun to serve as the subject of the modifying clause because it refers to people rather than objects or things.
  - F. **CORRECT.** Sentence 2 contains a structural error. The current placement of the clause “where the team played for thirty-five seasons” suggests that the clause is modifying the term “financial troubles,” which is illogical. The clause “where the team played for thirty-five seasons” should immediately follow the location, “New Jersey.” A revised version of the sentence might read, “After the team had financial troubles, the owner of the Nets decided to take the team to New Jersey, where the team played for thirty-five seasons.”
  - G. Incorrect. There are no errors in the structure of sentence 3. The phrase “including two appearances in the NBA finals” is a nonrestrictive phrase that provides further detail about the team’s “sixteen playoff appearances.” The phrase is set off by a comma because it is not essential to understanding the meaning of the sentence.
  - H. Incorrect. There are no errors in the structure of sentence 4. The clause “where the team now plays under the name the Brooklyn Nets” is a nonrestrictive clause that provides further detail about the team after its move back to New York in 2012. The clause is set off by a comma because it is not essential to understanding the meaning of the sentence.
- 

3. The question asks for the revision of the sentence that uses the **most** precise language.
- A. Incorrect. The word “extremely” does not specify the precise length of the trail (2,200 miles); “millions” is less precise than the specific number of people who hike the trail each year (two million); and the verb “do” imprecisely describes the purpose of visiting the trail (hiking).
  - B. Incorrect. While the revision specifies the precise length of the trail and the verb “hike” precisely describes the purpose of visiting the trail, “more than a million” is less precise than the specific number of people who hike the trail each year (two million).
  - C. **CORRECT.** The length of the trail (2,200 miles), the specific number of people who hike the trail each year (two million), and the action of the visitors (hiking) are clear and precise in this revision of the sentence.
  - D. Incorrect. The word “lengthy” is less precise than specifying the actual length of the trail (2,200 miles); “a couple million” is less precise than the specific number of people who hike the trail each year (two million); and the verb “do” imprecisely describes the purpose of visiting the trail (hiking).

4. The question asks for the pair of revisions needed to correct the errors in the paragraph, which appear in sentence 2 and sentence 3.
- E.** Incorrect. The comma after the word “homes” in sentence 1 is necessary for separating the subordinate clause “When coal was used to heat homes” from the main clause. The only edit needed in this pair is in sentence 3, which incorrectly shifts the verb into the present tense. The clause “as natural gas becomes more common” should be “as natural gas became more common.”
- F.** Incorrect. The comma after the word “homes” in sentence 1 is necessary for separating the subordinate clause “When coal was used to heat homes” from the main clause. In sentence 4, the word “remarketed” is in the past tense established in the paragraph and should not change to the past perfect tense “had remarketed.”
- G. CORRECT.** This option is the only choice that revises the errors in both sentence 2 and sentence 3. In sentence 2, a comma needs to follow the word “company” to set off the phrase “who owned a cleaning product company.” A comma is necessary because the phrase is a nonrestrictive clause: the phrase provides extra information about Cleo and Noah McVicker’s line of work, but the phrase is not necessary in order to understand the meaning of the sentence. The second error is in sentence 3, which incorrectly shifts the verb into the present tense. The clause “as natural gas becomes more common” should be “as natural gas became more common.”
- H.** Incorrect. In sentence 2, a comma needs to follow the word “company” to set off the phrase “who owned a cleaning product company.” In sentence 4, the word “remarketed” is in the past tense established in the paragraph and should not change to the past perfect tense “had remarketed.”

## REVISING/EDITING PART B

### Find Time to Volunteer

5. The question asks which revision of sentence 2 uses the **most** precise language.
- A. **CORRECT.** In sentence 2, the author states that people who volunteer in their free time do so “at various places.” The revision to sentence 2 provides the most precise language because it references three specific places (animal shelters, community centers, and parks) where people often volunteer.
  - B. Incorrect. Although this sentence mentions “a variety of places, events, or organizations” at which people volunteer, the revision does not use the most precise language, because it does not list specific places, events, or organizations.
  - C. Incorrect. Although this sentence mentions “local establishments that help people, animals, or other groups,” the revision does not use the most precise language, because it does not name the specific types of establishments at which people can volunteer.
  - D. Incorrect. Although this sentence mentions “places where [volunteers] can help people in many ways,” the revision does not use the most precise language, because it does not provide specific examples of where people can volunteer.
- 
6. The question asks which sentence should follow sentence 4 to introduce the main claim of the passage.
- E. **CORRECT.** Sentence 4 states that “research shows that those who volunteer also receive benefits.” The sentence in the option logically follows the ideas in sentence 4 and provides the best thesis statement for the passage because it introduces the main claim that high school students should consider the benefits of volunteerism.
  - F. Incorrect. While the sentence refers to the “benefits” mentioned in sentence 4, it erroneously asserts that “immediate and long-term results” are “guaranteed.” In addition, the sentence does not introduce the main claim of the passage that volunteering is beneficial for high school students.
  - G. Incorrect. Although the sentence states that “volunteerism can be beneficial for students,” it introduces the idea that “the family, and the community” benefit as well, which is not part of the main argument. Therefore, this sentence should not follow sentence 4 to introduce the main claim of the passage.
  - H. Incorrect. Although the sentence introduces the claim that “high school students should learn about” volunteering, it focuses on the idea that volunteering strengthens the community, which is not the main claim. This sentence does not accurately introduce the claim that volunteering is beneficial for high school students and thus should not follow sentence 4.

7. The question asks which sentence is least relevant to the ideas presented in the second paragraph (sentences 5–10) and should be deleted.
- A. Incorrect. Sentence 5 introduces the topic of the second paragraph, which is that finding time to volunteer “may sound impossible” for many students. Sentence 6 logically follows this idea because it provides one reason why students might hesitate or be unable to volunteer. Therefore, sentence 6 is relevant to the ideas presented in the second paragraph and should not be deleted.
  - B. **CORRECT.** Sentence 7 states that “time and energy” are required for volunteering, which partially addresses the topic of the second paragraph about the various commitments that fill high school students’ schedules. However, sentence 7 interrupts the flow of the paragraph by interjecting specific examples (“volunteering at a retirement center or homeless shelter”) into a general list of activities and commitments. Thus, the sentence is the least relevant to the paragraph and should be deleted.
  - C. Incorrect. In the second paragraph, the author discusses why some high school students may hesitate to volunteer. In sentences 6 and 9, the author points out that “schoolwork” and “family obligations and part-time jobs” are activities that require students’ time and may cause them to hesitate taking on any additional activities. Sentence 8 contributes to this idea by stating that “extracurricular activities” also require a time commitment from students. As a result, sentence 8 contributes to the ideas in the second paragraph and should not be deleted.
  - D. Incorrect. In the second paragraph, the author acknowledges that some high school students may hesitate to volunteer because of “schoolwork” and “extracurricular activities.” Sentence 9 contributes to this idea by stating that “family obligations and part-time jobs” also require a time commitment and may cause students to hesitate to volunteer. Therefore, sentence 9 contributes to the ideas in the second paragraph and should not be deleted.



8. The question asks which option would **best** follow sentence 12 to support the ideas presented in the third paragraph (sentences 11–12).
- E.** Incorrect. The subject of the main clause in sentence 12 is “admissions counselors.” Although the second sentence in the option mentions “admissions counselors,” it does not support the ideas in the paragraph, because the statement that “admissions counselors know that character traits like these will benefit the applicants” focuses on how students benefit, while sentence 12 focuses on how these traits benefit the community.
- F.** Incorrect. While sentence 11 discusses the potential academic and professional connections that can be made through volunteering, sentence 12 moves on to the topic of college admissions. Since the sentences in the option revert back to the topic of connections, they do not support and logically follow a sentence about how college admissions counselors view students with volunteering experience.
- G.** Incorrect. Although the sentence in the option continues on the subject of admissions counselors and follows the idea in sentence 12 that these counselors tend to favor students who “care about making their community and college campus a better place,” the sentence focuses on what students will do while in college rather than on how volunteering helps them get into college. Therefore, the sentence does not best follow sentence 12 and support the ideas presented in the third paragraph.
- H. CORRECT.** In sentence 12, the author states that college admissions counselors view students who list volunteer work on admissions applications as “applicants who care about making their community and college campus a better place.” The sentence in the option best follows sentence 12 and supports the ideas in the third paragraph because it provides additional details about why admissions counselors look beyond academics when considering students for admissions and the positive qualities assigned to those who have volunteering experience.

9. The question asks which concluding sentence should replace sentence 22 to provide the **best** support for the argument presented in the passage.
- A. Incorrect. Although the sentence lists examples of organizations that depend on “hardworking young people” as volunteers, it should not replace sentence 22, because its use of specific examples does not provide a strong conclusion to the main idea in the passage, and it does not best support the main argument that students benefit themselves and their community when volunteering.
  - B. Incorrect. While the sentence supports the argument that students “will experience a host of benefits” through volunteerism, it should not replace sentence 22 as a concluding sentence, because it does not best support the main argument that volunteerism benefits both the students and their community.
  - C. Incorrect. Although the sentence emphasizes the importance of prioritizing volunteerism, it should not replace sentence 22, because it focuses on the main idea in the second paragraph (“For many students, this proposition may sound impossible.”), rather than the main argument that volunteerism benefits both students and their community. This sentence introduces the idea that student volunteers “are soon encouraging their peers” to volunteer, which does not best support the argument presented in the passage.
  - D. **CORRECT.** This sentence should replace sentence 22 to conclude the passage because it lists specific reasons for volunteering (“Whether they are seeking admission to college, preparing to enter the workforce, or simply looking to reduce stress”) and best supports the main argument that volunteering not only helps students but can also help their community (“high school students who volunteer can help themselves as much as they help others”).

## Moving Through Mountains

- 10.** The question asks which sentence should be added to the end of the first paragraph in order to introduce the topic of the passage, which is the description, construction, and use of the Gotthard Base Tunnel.
- E.** Incorrect. The option is incorrect because it offers information about the funding used to build the Gotthard Base Tunnel but does not provide a description of the tunnel.
  - F.** Incorrect. The option is incorrect because it gives details about the opening ceremony of the tunnel but does not provide a description of the tunnel.
  - G. CORRECT.** The option correctly presents and describes the Gotthard Base Tunnel.
  - H.** Incorrect. The option is incorrect because it offers a result of completing the Gotthard Base Tunnel rather than offering an introductory statement presenting and describing the tunnel.
- 
- 11.** The question asks for a sentence that provides additional details about the tunnel-boring machines used to build the Gotthard Base Tunnel in order to support the description of the machines in sentence 7.
- A.** Incorrect. The option is incorrect because it offers information about how tunnel-boring machines were an improvement over previous methods but does not include information about how the machines work.
  - B. CORRECT.** The option is correct because it offers specific details about how tunnel-boring machines, such as the ones used to create the Gotthard Base Tunnel, drill through rock.
  - C.** Incorrect. The option is incorrect because it presents the idea that the tunnel could not be built until advances were made in tunnel-boring machine technology and does not describe how the machines function.
  - D.** Incorrect. The option is incorrect because, though it explains that there are different types of cutter heads used for different geologies, the geology of the tunnel area is not discussed in sentence 7 or in the rest of the paragraph.

- 12.** The question asks where sentence 11, which completes the detailed steps of how the tunnel was built, should be moved within the second paragraph in order to improve the organization of the paragraph.
- E.** Incorrect. The option, placing the sentence at the beginning of the paragraph (before sentence 6), is incorrect because it would not make sense since the process of building the tunnel has not yet been introduced.
  - F.** Incorrect. The option is incorrect because placing the sentence after sentence 6 would not make sense given that adding concrete would have to happen after the rock was broken down and removed from the tunnel.
  - G.** Incorrect. The option, placing the sentence between sentences 8 and 9, would be incorrect because the use of concrete did not take place before the removal of “28 million tons of rock” (sentence 9).
  - H. CORRECT.** The option, placing the sentence between sentences 9 and 10, is correct because placing the sentence there helps the reader understand the full sequence of steps performed in constructing the tunnel before the cost of the project is introduced.
- 

- 13.** The question asks which sentence should be removed because it presents an idea that shifts away from the main idea of the third paragraph, which is about the transportation benefits of the Gotthard Base Tunnel.
- A.** Incorrect. The option (sentence 13) is incorrect because the idea of faster travel times is important to the development of the main idea of the paragraph.
  - B.** Incorrect. The option (sentence 14) is incorrect because the sentence provides a specific example of decreased travel time between two cities when traveling through the Gotthard Base Tunnel, supporting the development of ideas in the paragraph.
  - C.** Incorrect. The option (sentence 15) is incorrect because the sentence compares the Gotthard Base Tunnel to another tunnel that provides an important connection between places; thus, the sentence supports the idea that transportation innovations are beneficial.
  - D. CORRECT.** The option (sentence 16) is the correct response because, even though the sentence provides additional information about the Channel Tunnel, it does not help the reader understand the benefits of the Gotthard Base Tunnel.

- 14.** The question asks for a transition that bridges the ideas between sentences 17 and 18 and accurately presents the relationship.
- E.** Incorrect. The option is incorrect because the use of the word “although” and the mention of freight trains suggest that sentence 18 will be about other types of vehicles that use the Gotthard Base Tunnel, and the transition phrase does not logically precede the sentence.
  - F.** Incorrect. The option is incorrect because the reference to the amount of time it took to build the tunnel does not help lead into the idea presented in sentence 18.
  - G. CORRECT.** The option is correct because it bridges the sentences by referring to the Gotthard Base Tunnel as a solution to the problems described in sentence 17 and logically introduces sentence 18.
  - H.** Incorrect. The option is incorrect because it suggests that sentence 18 is related to the increasing number of trains using the Gotthard Base Tunnel, which is not accurate.
- 
- 15.** The question asks for a concluding sentence that supports key ideas about the topic developed earlier in the passage.
- A.** Incorrect. The option is incorrect because the economies of surrounding areas are never mentioned in the passage.
  - B. CORRECT.** The option is correct because it supports the points made in the introductory paragraph by affirming the idea that the Gotthard Base Tunnel is an example of a way people have improved life by overcoming obstacles.
  - C.** Incorrect. The option is incorrect because, although the construction of the Gotthard Base Tunnel appears to have required many people to work together, the passage does not explicitly mention people or groups working together.
  - D.** Incorrect. The option is incorrect because it focuses on the cost of the Gotthard Base Tunnel, which is referred to only in sentence 10 of the passage.

## READING COMPREHENSION

### Excerpt from "How Exercise Could Help You Learn a New Language"

- 16.** The question asks how the author's use of comparison in paragraphs 4 and 5 contributes to the development of ideas in the excerpt.
- E.** Incorrect. Paragraph 5 does not claim that adults are never able to learn a second language, only that "it becomes harder to learn a second language after childhood."
  - F.** Incorrect. The issue of physical activity is never addressed in these paragraphs. They compare the relative ease with which children and adults learn languages.
  - G.** Incorrect. Paragraph 4 does not claim that more is known about language learning in children; in fact, it says that children simply absorb language easily and does not attempt to explain how.
  - H. CORRECT.** Because adult brains lose the "innate language capability" of children and have less plasticity when it comes to language learning, the study chose to focus on adults and how exercise might help them learn new languages.
- 
- 17.** The question asks how the first sentence from paragraph 6 functions in the overall structure of the excerpt.
- A.** Incorrect. While paragraph 6 begins to describe how the study was carried out, the results of the study have not been discussed in previous paragraphs.
  - B.** Incorrect. The population used for the study is an important detail that helps describe who participated in the study, as well as an ideal situation (college-age people trying to learn a new language), but this is not critical information used to determine the results.
  - C. CORRECT.** While paragraphs 4 and 5 address why the study focuses on adult language learning, the first sentence of paragraph 6 begins to give details about how the study was conducted, including describing the population being studied: "40 college-age Chinese men and women who were trying to learn English."
  - D.** Incorrect. The sentence from paragraph 6 does not include examples or discuss questions for further research; it simply introduces the subjects recruited for the study.

- 18.** The question asks for the **best** summary of the research procedure used in the study in the excerpt.
- E.** Incorrect. This summary says that students learned new words by matching words and images and “also by analyzing words in context,” but this last method was how the researchers assessed students, not how the students learned words; the summary is therefore inaccurate.
  - F. CORRECT.** The summary includes the most important information, which is that one group of non-English-speaking students exercised before and during the English lessons, while the other group did not, and that the students’ learning was assessed afterward.
  - G.** Incorrect. This summary is incomplete because it never mentions the control group—that is, the students who studied English without exercising—which was essential to the study so that results could be compared.
  - H.** Incorrect. This summary includes unnecessary details, such as that students were assessed after a short break and also assessed after a month of no studying; it also neglects to mention important points: that one group exercised both before and during learning, while the other group did not exercise at all.
- 
- 19.** The question asks why the researchers in the excerpt asked the English learners to assess whether the new words made sense in the context of actual sentences.
- A. CORRECT.** As stated in paragraph 11, “Most linguists feel that understanding sentences shows greater mastery of a new language” than mere memorization of new words, so the researchers realized that asking learners to assess words in context would be a better measure of how well they learned the new words.
  - B.** Incorrect. The excerpt never addresses how earlier research on adult language learners was conducted.
  - C.** Incorrect. Having learners respond to the new words in context was used not as a teaching tool but rather to assess learners’ mastery (paragraph 11).
  - D.** Incorrect. The excerpt describes how proficiency at assessing words in context began to emerge “after several weeks of instruction” (paragraph 14) and never suggests that the task became more difficult after an extended period of time.

- 20.** The question asks which sentence from the excerpt **best** supports Sulpizio’s assertion in paragraph 17 that exercise went beyond helping with memorization to deepen the language learners’ ability to use new vocabulary.
- E.** Incorrect. This sentence merely describes what the language-learning sessions were like, without making any claims about how the exercise affected the subjects’ understanding of how to use new words.
  - F.** Incorrect. While this sentence does address the fact that learners were required to think about how the new words should be used rather than just memorizing the words, it does not discuss results such as how the exercise affected their ability to do this.
  - G.** Incorrect. This sentence establishes only that exercise helped with the memorization of new words, not that exercise deepened learners’ grasp of how to use the new words.
  - H. CORRECT.** The fact that learners who exercised were better at identifying when the new words were used correctly in sentences directly supports Sulpizio’s assertion that the exercise deepened their grasp of how to use the new words.
- 
- 21.** The question asks what paragraph 18 reveals about the author’s perspective toward the study in the excerpt.
- A. CORRECT.** As paragraph 18 says, the study cannot address “whether other people completing other types of exercise would achieve the same results” as college students riding bikes.
  - B.** Incorrect. While paragraph 18 mentions that the students performed “relatively light exercise,” it never suggests that more rigorous exercise should have been studied, only that it is still unknown what the impact on language learning would be for other populations doing other types of exercise.
  - C.** Incorrect. Paragraph 18 points out only that the study’s results cannot be generalized to other populations performing other types of exercise and never speculates on whether the study’s results could be duplicated.
  - D.** Incorrect. Far from claiming that the study’s results could be applied more broadly to learning in general, paragraph 18 points out the ways in which the study’s results cannot be applied more broadly.



- 22.** The question asks which evidence from the excerpt is **most** relevant to the author’s claim that there are many unanswered questions about the relationship between movement and learning.
- E. CORRECT.** While the study revealed that the college students who used exercise bikes did better in their language learning, paragraph 18 indicates that we cannot know “whether other people completing other types of exercise would achieve the same results,” suggesting that there are many unknowns about the relationship between movement and learning.
  - F.** Incorrect. Rather than supporting the claim that there are many unanswered questions about the relationship between movement and learning, this statement offers a possible explanation as to why exercise might improve learning.
  - G.** Incorrect. The finding that exercise helps people retain their language learning longer (paragraph 15) adds to our understanding of the relationship between movement and learning rather than supporting the claim that there are still many unanswered questions.
  - H.** Incorrect. Sulpizio’s statement that the study suggests that “ ‘instruction should be flanked by physical activity’ ” (paragraph 21) does not in any way address the issue of unanswered questions about movement and learning.

**Excerpt from *Do Them No Harm!***

23. The question asks how paragraph 1 contributes to the setting of the excerpt.
- A. **CORRECT.** Paragraph 1 describes summer “when salmon spawn,” “huckleberries ripen,” and The People gather for “their annual camas harvest.” These descriptions show the abundance of food in the place where the excerpt occurs.
  - B. Incorrect. Although the setting refers to past events, the narration is not by The People. In addition, the voice narrating the excerpt is not an element of the setting.
  - C. Incorrect. Nothing in paragraph 1 suggests that the camp is changing in any way. The People gather annually in this place. In addition, the language used to describe the setting does not suggest any problems.
  - D. Incorrect. The People are not making observations about the setting in paragraph 1. They are described as performing actions, such as gathering “for the work and festivities of their annual . . . harvest.”
- 
24. The question asks how the beginning of the change of seasons **mainly** affects the characters.
- E. **CORRECT.** Paragraph 4 describes the time as the last chance for The People to be together “before the Cold Moons kept them close to their fires.” Paragraph 6 tells about how the women were working hard to dig and cure roots, because “WARM was going and COLD was coming.” These paragraphs describe both celebration and preparation before the winter comes.
  - F. Incorrect. Paragraphs 4 and 6 describe the characters working hard, but there is no discussion of them wanting to rest and relax.
  - G. Incorrect. While both paragraphs describe some of the work involved in the harvest, paragraph 4 also lists a number of leisure activities, such as visiting, foot racing, horse racing, gambling, and stick games. The characters are still taking the time to relax.
  - H. Incorrect. While paragraph 4 mentions trading in a list of activities that the characters are doing, this is just one of many activities. Allowing the characters to trade goods is not the way the change in seasons mainly affects them.
- 
25. The question asks how paragraphs 7 and 9 convey a central idea of the excerpt.
- A. Incorrect. Paragraphs 7 and 9 describe activities that The People do at the Red Bear camp. They do not describe The People exploring new areas.
  - B. Incorrect. While paragraph 7 lists some of the activities that The People did to help, neither paragraph emphasizes that The People need to be organized.
  - C. Incorrect. Paragraph 9 mentions how the sun blessed the Red Bear camp. However, these paragraphs do not otherwise mention weather.
  - D. **CORRECT.** Paragraph 7 lists activities that The People do with one another. Paragraph 9 states that “all were busy with their daily tasks.” Everyone is contributing to the community in their preparation for winter.

26. The question asks what is the **most likely** reason that the author repeats the word “played” in paragraph 8.
- E. Incorrect. Paragraph 7 describes the different tasks that the adults were doing at this time. They were not watching the children play, because they were busy working.
  - F. Incorrect. While everyone enjoys being at the gathering, the word “played” does not describe the activities of the adults. As described in paragraph 7, the adults are working together at various tasks.
  - G. Incorrect. The word “played” is used before phrases describing what the children did. It is not used to list activities available for all at the gathering.
  - H. **CORRECT.** The word “played” appears before different activities that the children did, such as pretending to hunt, take care of the babies, and take care of the animals. They played by pretending to do adult activities. The last sentence states that the children “learned how to live through their play.”
- 

27. The question asks how paragraphs 11–13 affect the plot of the excerpt.
- A. Incorrect. The paragraphs contain questions about the arriving people. They do not present differing points of view.
  - B. **CORRECT.** The paragraphs ask questions in which the characters wonder whether the arriving people are friends or enemies, or whether they might be bringing good news or bad news. By suggesting that the arriving people could present problems such as these, the paragraphs contribute to the rising action.
  - C. Incorrect. The paragraphs do not lead to a turning point. Instead, they lead to the climax—the moment the characters discover who the visitors are. This means the paragraphs contribute to the rising action.
  - D. Incorrect. Paragraphs 11–13 ask questions. They do not provide background information about the strangers; instead, they ask for it.

- 28.** The question asks how the phrases “trophies of their hunt” and “paraded around” affect paragraph 20.
- E.** Incorrect. The phrase “trophies of their hunt” describes the animals that the hunters have successfully found. They have already received their rewards (the animals) and are showing them to The People.
  - F.** Incorrect. The excerpt describes many ways that The People find and prepare their own food. While they appreciate the extra food, they are not dependent on the hunters.
  - G. CORRECT.** The hunters “parade around” because they are proud of the animals they have been able to get while hunting. Since a trophy is a recognition of success, they consider these animals their trophies.
  - H.** Incorrect. The phrases show the pride the hunters feel. As paragraph 20 says, the hunters want “all to see how strong their Hunting Power had been.” The phrases are focused on the hunters rather than on those who have gathered around them.
- 
- 29.** The question asks which quotation from the excerpt **best** supports the idea that The People feel a connection to members of their group in spite of distance.
- A.** Incorrect. This quotation describes the fact that The People always return to the same camp to perform the same traditional tasks and enjoy the same festivities as their ancestors. This quotation highlights the customs The People continue from their ancestors, but it does not focus on their present personal connections.
  - B. CORRECT.** This quotation alludes to The People’s eagerness to hear about the families who had traveled away from their group. This eagerness shows that they still feel a connection to these families, even though they are far apart.
  - C.** Incorrect. This quotation describes The People’s analysis of the visitors—that they may be hunters. It does not show a connection to the visitors.
  - D.** Incorrect. This quotation shows that The People are curious about a stranger who has come into their camp. It does not show closeness to distant members of the group.

- 30.** The question asks how the statement from paragraph 22 affects the villagers in the excerpt.
- E.** Incorrect. In paragraph 21, the villagers question who the woman is and from where she has come, but they are merely curious about her and not necessarily concerned, as there is no indication in paragraph 22 that she might be a threat.
  - F.** Incorrect. This statement reveals that the woman is a member of the Red Bear people who has returned, and in paragraph 15 there is a reference to four hunters who have been gone a long time. However, this statement serves only to satisfy the villagers' curiosity about who this woman is; it does not make the villagers hopeful that other people will also return.
  - G.** Incorrect. Though paragraph 23 reveals that the villagers are somewhat surprised because the girl has grown into a woman, paragraph 24 suggests they are excited to receive her. There is no reason given in paragraph 22 for them to grieve for her loss, since she has returned.
  - H. CORRECT.** The hunters' words from paragraph 22 amaze the villagers, who do not at first recognize the woman. Once they know she is one of their own, they are eager to interact with her, as revealed in paragraphs 24 and 25, where they give her a new name and care for her.
- 

- 31.** The question asks how the details in paragraph 5 about the locations of the camps and the details in paragraphs 23–24 about the reaction to the woman convey a theme of the excerpt.
- A.** Incorrect. Paragraph 5 does not reveal that The People move often, only that they come together near each other at this particular time of year. Paragraphs 23–24 reveal a resolution to the difficulty of people who are absent for some time, but they do not relate to the difficulty of moving often each year.
  - B. CORRECT.** The details in paragraph 5 show that The People seek to come together in order to share in recreational activities, demonstrating their connectedness. Similarly, the details in paragraphs 23–24 reveal that The People quickly embrace a member of their group who had gone away but has since returned. Taken together, these sections reveal just how much The People rely on their connectedness, a theme of the excerpt.
  - C.** Incorrect. Although paragraph 5 suggests that The People keep the customs of their ancestors alive, it does not reference storytelling. Further, though paragraphs 23–24 suggest that The People had knowledge of this woman's absence, they do not indicate that this knowledge came from stories in particular.
  - D.** Incorrect. In paragraph 24, an appropriate new name, meaning "Gone-from-Home-then-Come-Back," is bestowed on the returned woman. However, the importance of appropriate names is not a theme of the excerpt. Rather, the theme that is emphasized is the importance of the connection among The People, exemplified by the annual gathering and the warm welcome extended to the woman who has returned after a long absence.

## Invention of the Telegraph

- 32.** The question asks how the use of problem-solution in paragraph 2 contributes to the development of ideas in the passage.
- E.** Incorrect. While the discussion “aboard ship” in 1832 reminded Morse of the lectures he had attended at Yale College and made him consider how a coded message could be sent “over a wire” (paragraph 2), it was Morse’s failed attempts with electricity that caused him to reach out to Gale for help.
  - F.** Incorrect. While “Morse found when he began to develop his idea that he had little real understanding of the nature of electricity” (paragraph 2), the paragraph does not state that he was discouraged; it was his failed experimentation that resulted in him first realizing that he needed help.
  - G.** Incorrect. Paragraph 2 states that “Morse came to understand how [Faraday’s electromagnet] worked,” and this understanding is what caused him to think about sending messages over a wire. Also, Morse’s difficulty was in understanding the properties of electricity in general once he began his experimentation.
  - H. CORRECT.** The author’s use of problem-solution in paragraph 2 contributes to the development of ideas in the passage because the author states that “Morse found when he began to develop his idea that he had little real understanding of the nature of electricity, and . . . he finally turned for help to . . . Leonard D. Gale.” Thus, Morse’s longtime fascination was not enough to make up for his lack of knowledge about electricity.
- 
- 33.** The question asks how the details of the section “The Growth of an Idea” help convey a central idea of the passage.
- A.** Incorrect. Although paragraph 2 in this section states that Morse “speculated that it might be possible to send a coded message over a wire,” this section does not describe Morse and his colleagues’ ultimate success at sending such a message.
  - B. CORRECT.** The section helps convey a central idea because it mainly focuses on what inspired Morse to begin his work and explains how others were just as interested in working to achieve this goal. Paragraph 3 states that “Henry’s experiments, Gale’s assistance, and, soon after, hiring the young technician Alfred Vail were keys to Morse’s success.” Their shared interest in the possibilities of electricity inspired them to work together to find a way to use electricity to send long-distance messages.
  - C.** Incorrect. Paragraph 2 of the section explains how Morse came to understand how Faraday’s electromagnet worked and states that this invention prompted Morse to wonder whether it might be possible to send a coded message over a wire. However, that early idea of Morse’s only evolved into the telegraph after much more research and experimentation.
  - D.** Incorrect. Although paragraph 2 establishes that Morse was interested in lectures at Yale on electricity, the influence of what Morse learned at Yale was only a minor factor in his development of the telegraph.

- 34.** The question asks how the use of sequencing, or arranging in chronological order, in paragraph 3 contributes to the overall structure of the passage.
- E.** Incorrect. Although the inventions and advancements of others assisted in the development of the telegraph, the passage does not suggest that the other men were attempting to create their own telegraph systems.
  - F. CORRECT.** The use of sequencing in paragraph 3 emphasizes that Morse’s telegraph was created through a process of building upon earlier scientific ideas and breakthroughs. Paragraph 3 shows that when Morse approached Leonard D. Gale for help, Gale was able to inform Morse about Joseph Henry’s earlier experiments and research concerning electricity. Further, Gale built upon Henry’s work by showing Morse how to “regularly boost the strength of a signal and overcome the distance problems he had encountered by using a relay system Henry had invented.”
  - G.** Incorrect. The only other long-distance communication system mentioned in the passage is the outdated semaphore system discussed in paragraph 1.
  - H.** Incorrect. The telegraph system was in development for more than ten years because of the lack of funding and the need for further experimentation.
- 

- 35.** The question asks for the **best** summary of how Morse obtained the funding necessary to build his telegraph system.
- A.** Incorrect. This summary focuses mostly on what Morse did while his application for funding was delayed in the United States rather than on how Morse acquired the patent, because during this period, Morse tried “not only to secure patent protection overseas but to examine competing telegraph systems in England” (paragraph 5). Therefore, it is not the best summary of how Morse obtained the funding necessary to build his telegraph system.
  - B.** Incorrect. Although this summary mentions how Morse applied for the “federal government’s appropriation” (paragraph 4), it primarily focuses on the actions of the House of Representatives and the Senate, not on Morse’s efforts to obtain funding. Therefore, it is not the best summary of how Morse obtained the funding necessary to build his telegraph system.
  - C. CORRECT.** This summary best describes how Morse obtained the funding that he needed for his telegraph system, because it explains that Morse applied “for the federal government’s appropriation, and during the next year he conducted demonstrations of his telegraph” (paragraph 4). In paragraph 5, the author explains the impact that the Panic of 1837 had on Morse’s request. In paragraph 6, the author describes how by 1843, economic times had improved, so Morse again “asked Congress for the \$30,000” and was awarded the funds after “the Senate approved it.”
  - D.** Incorrect. This summary is not the best summary of how Morse obtained the funding necessary to build his telegraph system, because it relates how Morse worked with others to develop his ideas about the telegraph and how Gale and Vail were the “keys to Morse’s success” (paragraph 3) before he applied for funding.

- 36.** The question asks what the words “dramatic” and “spectacularly” convey in the sentence from paragraph 7.
- E.** Incorrect. While there may have been some feelings of relief and fulfillment when the lines were finished, the passage instead focuses on the wonder and joy that Morse and Cornell felt after overcoming setbacks and completing the construction of the telegraph system.
  - F. CORRECT.** Morse and Cornell rushed to post the wires overhead, and the “rigid deadline” (paragraph 7) was successfully met. The words have a positive and victorious tone that is consistent with the feeling of wonder that it worked and of celebration that the construction was completed.
  - G.** Incorrect. The passage does not share whether Morse or Cornell considered the future possibilities of the telegraph; it shares only that the finished product was “dramatic,” implying it was amazing to see.
  - H.** Incorrect. While the passage later discusses the expansion of overhead wires “up and down the Atlantic coast” and how they “connected the continents of Europe and America” (paragraph 8), there is no evidence shared in the passage that Morse planned to continue his work with electricity.
- 

- 37.** The question asks how the graph supports the ideas in paragraph 8.
- A.** Incorrect. While it can be inferred from the expansion shown on the graph that people possibly welcomed the improvement in long-distance communication, the graph does not state this explicitly.
  - B. CORRECT.** The graph shows the number of messages transmitted from 1870 to 1920. In 1920 almost 160 million messages were transmitted, showing a “dramatic”—almost double—increase from 1910.
  - C.** Incorrect. The graph does not show how many people used the telegraph, but rather it shows the number of messages sent. Additionally, paragraph 8 provides no details about hesitation on the part of individual people.
  - D.** Incorrect. While improvements in recording and interpreting code were made, the graph does not show the effect of this advancement on the speed or number of messages being transmitted.



- 38.** The question asks how the passage **mainly** illustrates the idea that the United States was mostly unaware of the possibilities of electricity in the mid-nineteenth century.
- E. CORRECT.** Paragraph 1 states that most signaling systems at the time were “visual or ‘semaphore’ systems using flags or lights” and that the United States government was looking for “just such a system along its entire Atlantic coast.” This option is correct because it shows that the government wanted to continue to use a limited system instead of finding ways to improve the system. Had the government been aware of the possibilities of electricity, a more sophisticated system might have been imagined.
  - F.** Incorrect. The delay in funding had to do with the Panic of 1837 and the “long depression” (paragraph 5) and was not because the House of Representatives was not aware of or ready for innovation in the use of electricity.
  - G.** Incorrect. The information in this option focuses on what prompted Morse to consider an electric wire-based communications system. While this option suggests that electrical devices were just beginning to be invented, it does not support the idea that the nation was unaware of the possibilities of electricity.
  - H.** Incorrect. While this option describes an early electrical innovation that may seem quite basic and limited to modern audiences, paragraph 3 states that this innovation was the work of a “pioneer in the new field,” implying that it was quite significant for its time. This option is incorrect because it focuses on those people in the United States who were aware of the possibilities of electricity.
- 

- 39.** The question asks which statement **most likely** represents a viewpoint held by the author of the passage.
- A.** Incorrect. The author explains that the aboveground wiring was used only because “Cornell suggested that [it was] the fastest and cheapest way” (paragraph 7), not because it would be more successful.
  - B.** Incorrect. The author conveys the importance of this advancement in communication without providing detailed information about electrical systems.
  - C.** Incorrect. While the Panic of 1837 caused a delay in Morse’s funding, the author shows that Morse received the appropriation in 1843 and was able to overcome the financial setback he faced.
  - D. CORRECT.** Paragraph 8 states that “telegraph lines soon extended westward, and within Morse’s own lifetime they connected the continents of Europe and America.” Therefore, this option is correct because the author presents Morse’s telegraph as a great leap in the ability to quickly communicate messages over distances never before imagined.

- 40.** The question asks how the map provides additional support for a central idea of the passage.
- E. CORRECT.** The map shows the telegraph line crossing continents in 1902, just forty-four years after the first message was sent in 1858. This is a much greater distance than the first line Morse built between “the Supreme Court chamber of the Capitol building and the railroad station in Baltimore” (paragraph 7).
  - F.** Incorrect. The map shows the distance the line covers; it does not indicate Morse’s lack of foresight in seeking patents only in North America.
  - G.** Incorrect. While Gale’s advice was crucial to Morse’s success, the map shows the physical line stretching across continents many years later, after their initial work.
  - H.** Incorrect. While it can be inferred that the telegraph had influence across the world, the amount of influence cannot be determined.

## Snowy Mountains

- 41.** The question asks how the description in the first stanza (lines 1–7) helps establish a central idea of the poem.
- A.** Incorrect. Details comparing the length of time the mountains have existed with the length of time the city has existed are referenced later in the poem.
  - B. CORRECT.** The poem is mostly about the grandeur of the mountains in spite of the spread of civilization. The first stanza contrasts these two elements.
  - C.** Incorrect. The poem actually communicates the message that people do not recognize the greatness of the mountains. This message is conveyed in the second stanza rather than in the first stanza.
  - D.** Incorrect. Although the first stanza mentions the size of the mountains, it does not imply that people cannot see how large the mountains are.
- 
- 42.** The question asks how line 5 helps develop the theme of the poem.
- E. CORRECT.** Line 5 helps develop the theme that the mountains are more important than people realize by suggesting that the mountains serve a noble, supportive purpose in the world.
  - F.** Incorrect. While the poem does describe the strength and permanence of the mountains, the line does not suggest that these traits attract the clouds.
  - G.** Incorrect. While the line states that the highest peaks are “at rest,” the mountains mentioned in the poem have already been harmed by human influence and do not remain untamed or untouched.
  - H.** Incorrect. While pillars are strong and may indicate shelter, there is no suggestion in the line that the mountains are protecting the people. Additionally, this concept is not a theme of the poem.
- 
- 43.** The question asks how the isolation of the word “Uprise” in line 7 affects the meaning of the poem.
- A.** Incorrect. The word “Uprise” describes the mountains and, therefore, does not create a contrast between the plateau and the city buildings; rather, it creates a contrast between the mountains and the plateau.
  - B.** Incorrect. The word “Uprise” contrasts the mountains with the plateau; it does not compare the mountains to the buildings in the city.
  - C.** Incorrect. The word “Uprise” does not create a vision of the region before people developed the land because the first stanza, which line 7 concludes, reveals that the land has already been developed. Line 3 establishes that the mountains rise “above the dingy city-roofs.”
  - D. CORRECT.** The isolation of the word “Uprise” powerfully emphasizes the first stanza’s description of the magnificent mountains standing tall above the land below.

44. The question asks for the line from the poem that **best** supports the idea that people have sacrificed natural beauty for profit.
- E. Incorrect. While city roofs may spoil the natural beauty, they do not directly symbolize financial gain or profit in line 3.
  - F. Incorrect. Although making a profit might have been the root cause of the damage that was done to the mountains, making war on the mountains is not a direct message about profit or financial gain in line 10.
  - G. Incorrect. Although tunneling through the mountains affects the natural beauty of the mountains, it does not directly symbolize financial gain or profit in line 11.
  - H. **CORRECT.** Advertisements are often used as a means to gain a profit, as implied by the soap advertisements in line 13. Additionally, the word “Plasters,” in line 13, communicates a negative connotation for the use of advertisements on the priceless natural beauty of the mountains.
- 

45. The question asks how the poet develops the speaker’s point of view in the second stanza.
- A. Incorrect. The speaker’s descriptions of the mountains’ awe-inspiring size and strength mainly occur in the first and third stanzas, while in the second stanza, the speaker focuses on humanity and its negative effect on the mountains.
  - B. Incorrect. The wording of the second stanza—“makes war” (line 10), “Splits down their shining sides” (line 12), and “Destroys the lonely fragments” (line 14)—communicates the speaker’s position that people’s main impact on the mountains is destructive; the wording does not illustrate different ways people impact the natural environment.
  - C. **CORRECT.** In the second stanza, the speaker criticizes the destructive actions of “the world” (lines 8 and 10) against the mountains—actions such as tunneling “their granite cliffs” (line 11) and destroying “the lonely fragments of their peace” (line 14).
  - D. Incorrect. In the second stanza, the speaker does not describe a positive relationship between the mountains and the people.

46. The question asks for the detail from the poem that reflects the speaker's view that people often fail to appreciate that which is familiar.
- E. Incorrect. Line 6 describes the mountains' location, rather than their long existence or their familiarity.
  - F. **CORRECT.** Line 9 most directly supports this idea by implying that the mountains have been there for so long that people are accustomed to seeing them and no longer appreciate their beauty and value.
  - G. Incorrect. In line 12, the mention of harm that has been done to the mountains does not connect to a sense of familiarity.
  - H. Incorrect. Although line 18 alludes to the long existence of the mountains, it does not connect this long existence with a sense of familiarity or the failure of people to appreciate the mountains' worth.
- 

47. The question asks how lines 21–22 help convey the speaker's point of view.
- A. Incorrect. The word "barrier" (line 21) refers to the speaker's opinion that the mountains were "spread by Gods" (line 19) and not to an obstacle that the speaker thinks should be removed.
  - B. Incorrect. While the lines indicate that people have lost the need to connect with nature, they do not reveal that the speaker thinks that the cause of this loss is busyness.
  - C. **CORRECT.** The words "those who do not need / The joy" in lines 21–22 reflect the speaker's sadness that people do not realize that they are destroying something wonderful and irreplaceable.
  - D. Incorrect. Although the speaker does say that the stone is "time-resisting" (line 22), this belief is only a small detail of the speaker's point of view.
- 

48. The question asks how the details in the third stanza **most** contribute to the development of a theme of the poem.
- E. **CORRECT.** In the third stanza, phrases such as "Wilderness still untamed" (line 17), "time-resisting storm-worn stone" (line 22), and "The mountains swing along" (line 23) convey the message that in spite of the destruction described in the second stanza, the mountains manage to maintain their wild magnificence.
  - F. Incorrect. While the phrase "Barrier broken down" (line 21) conveys the idea that people can have some effect on the natural landscape, it does not convey how nature affects people.
  - G. Incorrect. The phrase "those who do not need" (line 21) implies a choice to damage nature and not a lack of awareness or understanding.
  - H. Incorrect. The third stanza is not a call to humanity to respect the mountains but a description of the untamed, welcoming mountains and the joy they provide for those who appreciate them.

49. The question asks what the personification in the concluding lines of the poem suggests about the mountains.
- A. **CORRECT.** Line 25's use of the word "Welcoming" suggests that the mountains are kind hosts. Lines 23 and 26, with language such as "The mountains swing along" and "The mists that dance and drive before the sun," imply the carefree nature of the mountains as they resist the destructive work of humanity.
  - B. Incorrect. The personification in the lines conveys a sense of optimism and endurance, with no language to suggest coming destruction.
  - C. Incorrect. Although the lines mention that "the mountains swing along" (line 23) and "the mists . . . dance" (line 26), the personification is used to describe the mountains' perseverance, rather than to suggest that the mountains are amused by the concerns of others.
  - D. Incorrect. Although the second stanza develops the idea that the mountains have been mistreated by humans, which might be a source of pain, the concluding lines emphasize the joy and perseverance of the mountains as they "swing along" (line 23) despite significant adversity.

**Excerpt from “The Past and the Future of the Earth’s Oldest Trees”**

- 50.** The question asks what the effect is of comparing groups of bristlecone pines to “a city within a cemetery” (paragraph 2).
- E.** Incorrect. The reference to “a city within a cemetery” describes how new trees use the remnants of their “ancestors” (paragraph 2) and makes no comment on the appearance of young versus mature trees.
  - F. CORRECT.** The “cemetery” contains “the bones of their ancestors” (paragraph 2)—“ancestors” being earlier generations of bristlecone pines—which provide some of the nutrients that the new trees need.
  - G.** Incorrect. The reference to “a cemetery” is not a comment on how long bristlecone pines can live; rather, it illustrates that the new pines are using remnants of their “ancestors” (paragraph 2) to grow.
  - H.** Incorrect. Although the climate is mentioned in paragraph 2, it is not the reason for the comparison to “a city within a cemetery.” The comment is intended to illustrate how the new trees use nutrients left behind by the old ones.
- 
- 51.** The question asks how paragraph 4 **mainly** conveys the idea that the bristlecone pine can withstand difficult conditions.
- A.** Incorrect. While paragraph 4 does mention the bristlecone pine in conjunction with other long-living trees, this does not explain in any way how the bristlecone pine can survive difficult conditions.
  - B. CORRECT.** Paragraph 4 mentions several qualities that help the bristlecone pine survive a difficult environment: it can survive in a “dry, cold climate” as few plants can, it tolerates a soil that is heavily alkaline and low in nutrients, and the density of its wood protects it from insects.
  - C.** Incorrect. Paragraph 4 focuses on the qualities of the bristlecone pine that make it well suited to the White Mountains rather than on why the White Mountains are well suited to bristlecone pines.
  - D.** Incorrect. While paragraph 4 does acknowledge that the bristlecone pine has few competitors because the pine can stand conditions few other plants can stand, it is the examination of the pine’s unique qualities that explains how the pine survives those conditions.

- 52.** The question asks how the first sentence of paragraph 5 contributes to the development of ideas in the excerpt.
- E.** Incorrect. While “two-hundredths of an inch” is a reference to the bristlecone pine’s growth pattern, the point of the reference—and of the entire sentence—is to emphasize the incredibly slow pace of the pine’s life cycle.
  - F.** Incorrect. While “wars raged” is a threat that empires face, the point of mentioning wars and the rise and fall of empires is to emphasize the bristlecone pine’s slow-paced life cycle by contrasting its slowness with the big, dramatic changes taking place in human history during that life cycle.
  - G. CORRECT.** Making reference to huge changes in human history such as the rise and fall of empires and the raging of wars provides a sharp contrast to the incredibly slow growth of the bristlecone pine.
  - H.** Incorrect. This sentence describes how slowly the bristlecone pine grows in contrast to how dramatically human history changes in the same time span but never explains the reasons for the pine’s longevity.



- 53.** The question asks which claim is **best** supported by the details about the bristlecone pine tree's ring record presented in paragraph 5.
- A.** Incorrect. In paragraph 5, the author explains that the bristlecone pine is "an exceptionally useful source of data about changing conditions on Earth," and this suggests that the information presented by the trees is particularly valuable and important. However, while the paragraph explains that the data provided by the trees are important, it does not address the need to protect the trees from any threat of extinction. The only reference to the trees' extinction is in paragraph 7, when the author addresses the "possibility that climate change will cause their extinction" but then explains that "scientists tend to discount the idea that the bristlecones are in immediate danger."
- B.** Incorrect. Paragraph 5 describes "minute changes in the tree-ring record" that make bristlecone pines "an exceptionally useful source of data about changing conditions on Earth," and examples of those changing conditions are described in the present tense: "When rains are heavier than normal, the rings widen." However, the term "record" indicates that the tree rings are already formed by the time scientists study them. The trees provide information about the past, which is emphasized by the description at the beginning of paragraph 5 of historic events one tree lived through. The excerpt contains no information about whether scientists can use the climate patterns of the past as evidenced by tree rings to make predictions about the future.
- C.** Incorrect. Paragraph 5 describes the "slow-motion existence" of the bristlecone pine and provides examples of the record of "changing conditions on Earth" reflected in the rings of the trees. However, although the paragraph makes it clear that the trees have been able to survive these changing conditions, the paragraph does not indicate that the slow growth of the trees, each of which adds only "about two-hundredths of an inch to the diameter of its trunk each year," is the key to their survival. Instead, paragraph 4 lists other reasons why an established bristlecone pine "can last almost indefinitely," including distance between individual trees; tolerance for cold, dry conditions and dolomite soil; and bark that is resistant to insects.
- D. CORRECT.** Paragraph 5 emphasizes the longevity of the bristlecone pine by discussing its "implacable slow-motion existence" and how this makes the trees a valuable source of information for scientists. The author explains that "minute changes in the tree-ring record make bristlecones an exceptionally useful source of data about changing conditions on Earth." A tree that has been alive since 2500 B.C., like the one in paragraph 5, can provide a long record of the changing climate.

- 54.** The question asks what the phrases “clings to life” and “stripped of bark” in paragraph 6 are used to emphasize.
- E.** Incorrect. While these two phrases are suggestive of the tree’s fragility, nothing in this paragraph suggests that the tree needs help to avoid extinction.
  - F.** Incorrect. While the tree may be misunderstood to be dead because it is “stripped of bark,” the phrase “clings to life” emphasizes the fact that the tree is not dead but manages to survive.
  - G.** Incorrect. The paragraph says that far from being interested in the tree’s unusual appearance, “most people march past it without giving it a second glance” (paragraph 6).
  - H. CORRECT.** The phrase “clings to life” emphasizes that the tree is still surviving even though it is partially fossilized, as shown by its “marbled hulk stripped of bark” (paragraph 6).
- 
- 55.** The question asks which central idea of the excerpt is supported by the details in paragraph 7.
- A.** Incorrect. While paragraph 7 mentions the pines’ ability to survive climate change, the central idea is about the trees’ longevity. Surviving climate change is a part of the pines’ longevity, but just surviving climate change does not fully encompass the central idea of the excerpt.
  - B.** Incorrect. Although the paragraph mentions that the “super-elderly trees” are each unique in appearance, their appearance does not directly connect to their ability to survive. The details in paragraph 7 emphasize the durability and longevity of the trees.
  - C.** Incorrect. While the beginning of paragraph 7 expresses the idea that each bristlecone pine appears to be a unique individual and supports the idea that humans relate to the pines, the paragraph expresses a stronger central idea in the last two sentences about the pines’ survival.
  - D. CORRECT.** The longevity of bristlecone pines is a central idea of the excerpt. Experts are encouraged that bristlecone pines have survived many catastrophes, and the details in the second half of paragraph 7 draw direct attention to the trees’ longevity.

56. The question asks for the **best** summary of the bristlecone pine’s life cycle.
- E. Incorrect. Though the summary in this option covers key points in the life cycle, it focuses on minor details (“stubby seedling” and “alkaline soil”) while leaving out major details of the life cycle (for example, the fact that parts of the trees become fossilized over time).
  - F. Incorrect. This option addresses the unique quality of the pine growing from “fragments of its dead ancestors”; however, it does not address the fossilization phase, which is a major part of the life cycle. In addition, this option incorrectly states that the tree continues to funnel nutrients to its stem.
  - G. **CORRECT.** The option describes the key phases of the pine’s life cycle without focusing on minor details. The organization of the summary is chronological, and the information presented is accurate.
  - H. Incorrect. The option focuses more on the location and the appearance of the pine than on the phases of the pine’s life cycle. The option contains an accurate description of the pine’s appearance but provides little information about the main phases of its life cycle.
- 

57. The question asks how the author **mainly** conveys his point of view throughout the excerpt.
- A. **CORRECT.** The author clearly conveys his interest in and admiration of the bristlecone pine by sharing many details throughout the excerpt that show how unusual the tree is; these include details about the tree using remnants from previous generations (paragraph 2), details about the tree’s “agonizingly” slow growth rate (paragraph 3), and details about the incredibly difficult growing conditions that the tree thrives in (paragraph 4).
  - B. Incorrect. While the author does briefly compare the bristlecone pine to global empires (paragraphs 1, 3, and 5), he mainly offers many details throughout the excerpt about what makes the bristlecone pine so unusual.
  - C. Incorrect. While paragraph 6 largely focuses on the contrast of the pine’s sickly appearance with its ability to survive, this is just one detail about the pine that makes it unusual. The author offers many such details throughout the excerpt.
  - D. Incorrect. The author suggests in paragraph 7 that the bristlecone pine “may survive humanity,” but this is just one detail about the bristlecone that the author offers in an excerpt full of details, each of which contributes to an understanding of how unusual this tree is.

## Form B

# Sample Test – Mathematics Explanations of Correct Answers

**58. (-0.8)** First, distribute  $\frac{3}{5}$  over  $(2x + 5)$  to get the expression  $\frac{6}{5}x + 3 - 2x$ .

Express  $-2x$  as  $-\frac{10}{5}x$  and then add like terms:

$$\frac{6}{5}x + 3 + \left(-\frac{10}{5}x\right) = -\frac{4}{5}x + 3.$$

The coefficient of  $x$  is  $-\frac{4}{5}$ .

When expressed as a decimal,

$$-\frac{4}{5} = -0.8.$$

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**59. (5)** There will be 5 different outcomes with a sum of 6:

$$1 + 5 = 6$$

$$2 + 4 = 6$$

$$3 + 3 = 6$$

$$4 + 2 = 6$$

$$5 + 1 = 6$$

**60. (95)** First, find the perimeter of the figure.

Two sides do not have labels. The top of the figure measures 13 cm and the bottom shows a length measuring 8 cm, so the horizontal side without a label measures 5 cm ( $13 - 8$ ).

The left side of the figure measures 6 cm and the right side shows a length measuring 3 cm, so the vertical side without a label measures 3 cm ( $6 - 3$ ).

So the total perimeter of the scale drawing is

$$13 + 3 + 5 + 3 + 8 + 6 = 38 \text{ cm}$$

Use the scale to find the perimeter of the actual garden:

$$\frac{1 \text{ cm}}{2.5 \text{ m}} = \frac{38 \text{ cm}}{p \text{ m}}$$
$$p = 2.5 \times 38 = 95$$

- 
- 61. (21)** The 11:00 a.m. temperature is 3.5 times the 9:00 a.m. temperature. The 9:00 a.m. temperature was  $4^\circ$  F.

$$4 \times 3.5 = 14$$

The temperature increased from  $-7^\circ$  F at 5:00 a.m. to  $14^\circ$  F at 11:00 a.m., which is an increase of  $21^\circ$  F.

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- 62. (32)** The volume of a triangular prism is found by multiplying the area of the triangular base by the height of the prism.

The area of the triangular base of the prism is  $\frac{1}{2}bh = \frac{1}{2}(4)(8) = 16$  square inches.

The height of the triangular prism is 2 inches.

So the volume of the triangular prism, in cubic inches, is  $16 \cdot 2 = 32$ .

- 63. (A)** The  $x$ -axis represents the length of the pole, in feet, and the  $y$ -axis represents the weight of the pole, in ounces.

The point  $(1, 4)$  means that a 1-foot pole would weigh 4 ounces.

Since the graph is linear, the pole weighs 4 ounces for every additional 1 foot of length.

So the unit rate is 4 ounces per foot.

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- 64. (F)** Find the sum of  $2.5 + (-4.5)$ :

$$2.5 + (-4.5) = 2.5 - 4.5 = -2$$

Point F is located at  $-2$ .

---

- 65. (C)**

$$\frac{9}{2x} = \frac{3y}{8}$$

$$9 \cdot 8 = 72$$

$$2x \cdot 3y = 6xy$$

$$72 = 6xy$$

$$12 = xy$$

66. (E)

$$\begin{aligned}15,600 \times 12\% &= \\15,600 \times 0.12 &= 1,872 \\15,600 - 1,872 &= 13,728\end{aligned}$$

67. (B)

$$\begin{aligned}4\frac{2}{3} \div 2\frac{1}{2} &= \frac{14}{3} \div \frac{5}{2} = \\ \frac{14}{3} \times \frac{2}{5} &= \frac{28}{15} = 1\frac{13}{15}\end{aligned}$$

68. (F) Let  $x$  be the number of assistants.

Since the ratio of assistants to players

is  $\frac{1}{6}$ , then:

$$\begin{aligned}\frac{1}{6} &= \frac{x}{36} \\ \frac{36}{6} &= x \\ 6 &= x\end{aligned}$$

There are a total of 6 assistants.

So the ratio of coaches to assistants

$$\text{is } \frac{3}{6} = \frac{1}{2}.$$

69. (A) The posts are each 10 feet long, and  $3\frac{1}{3}$  feet of each post is below the ground, so the height of the part of the posts that is above the ground is the difference between the two amounts:

$$\begin{aligned}10 - 3\frac{1}{3} &= \\ \frac{10}{1} - \frac{10}{3} &= \\ \frac{30}{3} - \frac{10}{3} &= \frac{20}{3} = 6\frac{2}{3} \text{ feet}\end{aligned}$$

70. (F) First substitute 2 for  $r$  in the equation.

$$\begin{aligned}p + 2r &= r(p + 1) + 1 \\ p + 2(2) &= 2(p + 1) + 1\end{aligned}$$

Then solve for  $p$ .

$$\begin{aligned}p + 2(2) &= 2(p + 1) + 1 \\ p + 4 &= 2p + 2 + 1 \\ p + 4 &= 2p + 3 \\ p + (4 - 3) &= 2p + (3 - 3) \\ p + 1 &= 2p \\ (p - p) + 1 &= 2p - p \\ 1 &= p\end{aligned}$$

The value of  $p$  is 1.

- 71. (B)** First, determine the rate at which Martina reads, in pages per day, using the rate at which Karen reads, 60 pages per day.

$$60 + 60 \cdot \frac{25}{100} =$$

$$60 + 60 \cdot 0.25 =$$

$$60 + 15 = 75$$

Next, determine the number of days it will take each person to complete the 1,500-page reading assignment.

$$\text{Karen: } \frac{1,500 \text{ pages}}{k \text{ days}} = \frac{60 \text{ pages}}{1 \text{ day}}$$

$$60k = 1,500$$

$$(60 \div 60)k = 1,500 \div 60$$

$$k = 25 \text{ days}$$

$$\text{Martina: } \frac{1,500 \text{ pages}}{m \text{ days}} = \frac{75 \text{ pages}}{1 \text{ day}}$$

$$75m = 1,500$$

$$(75 \div 75)m = 1,500 \div 75$$

$$m = 20 \text{ days}$$

Finally, determine the difference between the two numbers of days.

$$25 - 20 = 5$$

So Martina will complete the assignment 5 days sooner than Karen.

- 72. (H)** Claire's goal is to run at least 2,500 meters, and she has already run 650 meters.

$$2,500 - 650 = 1,850$$

Claire has at least 1,850 meters left to run. Divide by the distance around the track to find the number of laps she needs to complete:

$$1,850 \div 120 \approx 15.417$$

Since she wants to run at least 2,500 meters, round 15.417 up to 16. Claire needs to run 16 laps to meet her goal.

- 73. (D)** First, determine the number of employees in 2010:

$$200 \times 25\% = 200 \times 0.25 = 50$$

So the number of employees in 2010 is  $200 + 50 = 250$ .

Next, determine the number of employees in 2015:

$$250 \times 10\% = 250 \times 0.10 = 25$$

So the total number of employees in 2015 is  $250 + 25 = 275$ .

- 74. (E)** The probability of choosing a green candy is twice as great as the probability of choosing a red candy. There are 12 green candies. Let  $r$  = the number of red candies.

$$\begin{aligned} 12 &= 2r \\ r &= 6 \end{aligned}$$

So there are 6 red candies. 12 green candies + 4 yellow candies + 6 red candies = 22 total candies.

There are 4 yellow candies out of a total of 22 candies. So the probability of choosing a yellow candy is

$$\frac{4}{22} = \frac{2}{11}.$$



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**75. (D)** The amount of data in a box plot is broken into 4 parts, or quartiles, which each represent 25% of the data. So the amount of data represented between Quartile 1 (12) and the median (16) is about 25% of the data.

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**76. (E)** There is a proportional relationship between the length of the race,  $x$  miles, and the number of water stations,  $y$ . The constant of proportionality is

$$\frac{y}{x} = \frac{2}{3}$$
$$y = \frac{2}{3}x$$

Therefore, the equation  $y = \frac{2}{3}x$  represents this relationship.

**77. (B)** If half the undecided voters (half of 20) vote in favor of building the park, the total number of “yes” votes from the survey will be 152.

$$142 + 10 = 152$$

There are 24,100 voters, and 200 residents were surveyed. Set up a proportion to solve:

$$\frac{152}{200} = \frac{x}{24,100}$$
$$\frac{19}{25} = \frac{x}{24,100}$$
$$(24,100)\left(\frac{19}{25}\right) = x$$
$$18,316 = x$$

- 78. (E)** All the numbers are negative, so they are all less than zero. Consider the absolute value of each number and where it falls on a number line. The negative number closest to 0 will be the greatest.

The negative number with the greatest absolute value is  $-49$ , so it has the least value.

The negative number with the next greatest absolute value is  $-1$ , so it would fall next in order from least to greatest.

$$-49, -1$$

Compare the absolute values of

$$-\frac{1}{49} \text{ and } -\frac{1}{7}.$$

$$\frac{1}{49} < \frac{1}{7}$$

Therefore, the numbers listed from least to greatest are:

$$-49, -1, -\frac{1}{7}, -\frac{1}{49}$$

So the number  $-\frac{1}{49}$  is the greatest.

- 79. (C)** Calculate the decimal equivalent of  $-\frac{13}{11}$ :

$$-\frac{13}{11} = -1.18181818\dots = -1.\overline{18}$$

- 80. (H)** Each loaf of bread requires  $\frac{1}{5}$  ounce of salt. Therefore, the baker can make 5 loaves of bread with 1 ounce of salt. Multiply to find the number of loaves that can be made with 40 ounces of salt:

$$5 \times 40 = 200$$

**81. (D)** First, subtract to simplify.

$$\frac{1\frac{5}{7} - 1\frac{6}{7}}{3\frac{4}{7} - 3\frac{6}{7}} = \frac{-\frac{1}{7}}{-\frac{2}{7}} = -\frac{1}{7} \div -\frac{2}{7}$$

Follow the process for dividing fractions:

$$\left(-\frac{1}{7}\right) \times \left(-\frac{7}{2}\right) = \frac{7}{14} = \frac{1}{2}$$

**82. (F)** Split the compound inequality into two inequalities.

$$-5 \leq 1 - 3x \text{ and } 1 - 3x \leq 4$$

For each inequality, subtract 1 from each side.

$$-6 \leq -3x \text{ and } -3x \leq 3$$

For each inequality, divide both sides by  $-3$ . Note that dividing each side of an inequality by a negative number changes the direction of the inequality.

$$2 \geq x \text{ and } x \geq -1$$

Combining the pieces gives the compound inequality  $-1 \leq x \leq 2$ .

The solution is that  $x$  is greater than or equal to  $-1$  and less than or equal to  $2$ , so choose the number line with filled circles at  $-1$  and  $2$ , with the filled segment between the circles.

- 83. (D)** Set up a proportion:

$$\frac{1 \text{ sind}}{0.75 \text{ plunk}} = \frac{x \text{ sinds}}{8 \text{ plunks}}$$

$$1(8) = 0.75x$$

$$8 = \frac{75}{100}x$$

$$8 = \frac{3}{4}x$$

$$8\left(\frac{4}{3}\right) = x$$

$$\frac{32}{3} = x$$

$$10\frac{2}{3} = x$$

$$10.67 \approx x$$

- 84. (F)**  $8x - (7 + 2.5x) + 2$

First, distribute  $-1$  over  $7 + 2.5x$ :

$$8x - 7 - 2.5x + 2$$

Then combine the like terms:

$$5.5x - 5$$

The simplified form of the expression is  $5.5x - 5$ .

- 85. (B)** Groups P and Q have an equal number of members. All the members of Group P are 17 or older, but only about  $\frac{3}{4}$  of the members of Group Q are 17 or older.

- 86. (G)** Jar Q contains 12 balls, and the probability of drawing a yellow ball at random is  $\frac{1}{3}$ .

$$\frac{1}{3} \times \frac{4}{4} = \frac{4}{12}$$

There are 4 yellow balls in Jar Q.

Jar R contains 8 balls, and the probability of drawing a yellow ball at random is  $\frac{3}{4}$ .

$$\frac{3}{4} \times \frac{2}{2} = \frac{6}{8}$$

There are 6 yellow balls in Jar R.

Jar S contains all the balls from Jar Q and Jar R.

$$12 + 8 = 20$$

There are 20 balls in Jar S.

$$4 + 6 = 10$$

There are 10 yellow balls in Jar S.

$$\frac{10}{20} \div \frac{10}{10} = \frac{1}{2}$$

The probability of drawing a yellow ball at random from Jar S is  $\frac{1}{2}$ .

- 87. (D)** The ratio of pretzels to raisins in Gia's bag of snack mix, 12:9, is equivalent to the ratio of pretzels to raisins in Trevon's bag, 16:12.

$$\frac{12}{9} = \frac{16}{12} = \frac{4}{3}$$

- 88. (G)** First, substitute  $4x$  for each  $y$  in the expression:

$$3y + 2(3y + 5) - x = \\ 3(4x) + 2[3(4x) + 5] - x$$

Then simplify the expression:

$$3(4x) + 2[3(4x) + 5] - x$$

$$12x + 2(12x + 5) - x$$

$$12x + 24x + 10 - x$$

$$12x + 24x - x + 10$$

$$35x + 10$$

The simplified expression is  $35x + 10$ .

- 
- 89. (C)** First, determine the area of each circle using the formula  $A = \pi r^2$ :

A circle with a diameter of 18 inches has a radius of 9 inches, so the area is  $\pi(9)^2 = 81\pi$ .

A circle with a diameter of 12 inches has a radius of 6 inches, so the area is  $\pi(6)^2 = 36\pi$ .

The difference between the two areas is  $81\pi - 36\pi = 45\pi$ .

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- 90. (F)** First, determine 10% of  $|x|$ .

$$\begin{aligned}0.10 \cdot |x| &= \\0.10 \cdot |-4| &= \\0.10 \cdot 4 &= 0.4\end{aligned}$$

Then determine the sum of  $x$  and 10% of  $|x|$ .

$$-4 + 0.4 = -3.6$$

The sum is  $-3.6$ .

- 91. (A)** The volume of a cube is  $V = s^3$ , where  $s$  is the length of one edge.

$$\text{So } 512 = s^3, \text{ and } s = \sqrt[3]{512}.$$

If you are not sure how to find the cube root, you can estimate.

We know

$$\begin{aligned}10 \times 10 \times 10 &= 10^3 = 1,000, \text{ so} \\ \sqrt[3]{1,000} &= 10.\end{aligned}$$

Since 512 is less than 1,000, the answer must be less than 10. The only given option less than 10 is 8. Double-check to make sure this is correct:

$$8^3 = 8 \times 8 \times 8 = 512.$$

- 92. (F)** The temperature on Tuesday was  $84^{\circ}$  F, which was 5% higher than the temperature on Monday.

This can be represented by the equation  $84 = 1.05x$ .

Dividing both sides of this equation by 1.05 gives  $x = 80$ .

Therefore, the temperature on Monday was  $80^{\circ}$  F.

Since the temperature on Wednesday was 10% lower than the temperature on Monday, the difference between the two temperatures would equal  $(10\%)(80) = 8.0^{\circ}$  F.

- 93. (B)** First, determine all possible factors of 168. One method of doing this is to use a table to list pairs of factors.

<b>Factors of 168</b>	
1	168
2	84
3	56
4	42
6	28
7	24
8	21
12	14

Then determine the group of three sequential factors  $(n - 1)$ ,  $n$ , and  $(n + 1)$  where  $n$  is as large as possible. This group is 6, 7, and 8, where  $n = 7$ .

- 94. (E)** The total number of days (86) is divided by the number of days in a week (7).

$$86 \div 7 = 12, \text{ with a remainder of } 2$$

The 2 days are counted back from Tuesday, so the first performance was on a Sunday.

- 
- 95. (C)** Add the taxes to the amount of the check to find Michael's total pay before taxes were deducted:

$$213 + 32 = 245$$

Divide the total pay by the number of hours to find the hourly pay rate:

$$245 \div 20 = 12.25$$

- 
- 96. (G)** To find surface area, use the formula  $A = 2(hw + hl + lw)$ :

$$A = 2[(20)(40) + (20)(50) + (50)(40)]$$

$$A = 2(800 + 1,000 + 2,000)$$

$$A = 2(3,800) = 7,600$$

- 97. (C)** The value of the car decreased \$5,000 in two years: \$15,000 to \$10,000.

$$5,000 \div 2 = 2,500$$

Therefore, the value of the car decreases \$2,500 each year. After the first 3 years, the car's value had decreased \$7,500.

$$\text{So } 7,500 + 15,000 = 22,500.$$

- 
- 98. (F)** If Alana picks 4 blue disks in a row, the number of blue disks and the total number of disks will both decrease by 1 after each selection.

For the first selection, there are 4 blue disks out of 9 total disks, so the probability of selecting the first blue disk is  $\frac{4}{9}$ .

The probabilities of selecting blue for the next three selections are  $\frac{3}{8}$ ,  $\frac{2}{7}$ , and  $\frac{1}{6}$ .

$$\frac{4}{9} \times \frac{3}{8} \times \frac{2}{7} \times \frac{1}{6} = \frac{24}{3,024} = \frac{1}{126}$$



99. (A) Rewrite the percent as a decimal:

$$\frac{1}{2}\% = 0.5\% = 0.005$$

So the correct answer must **not** equal 0.005:

Option A

$$\frac{0.005}{100} = 0.00005$$

Option B

$$\frac{\frac{1}{2}}{100} = 0.5 \div 100 = 0.005$$

Option C

$$\frac{5}{1,000} = 0.005$$

Option D

$$\frac{1}{200} = 0.005$$

All answer options except Option A equal 0.005. Therefore, Option A is the correct answer.

100. (H) To find out how many members there were in 2002, calculate 40% of 50 and then add it to 50.

$$50 \times 0.40 = 20$$

$$20 + 50 = 70 \text{ members}$$

To find out how many members there were in 2003, calculate 40% of 70 and then add it to 70.

$$70 \times 0.40 = 28$$

$$28 + 70 = 98 \text{ members}$$

To find out how many members there were in 2004, calculate 40% of 98 and then add it to 98.

$$98 \times 0.40 = 39.2$$

The result is 39.2, which is rounded to 39 to keep members to the nearest whole number.

$$39 + 98 = 137 \text{ members}$$

**101. (D)**  $6x - 20 < 5x - 2(5 - 3x)$

Distribute the coefficient  $-2$  on the right-hand side:

$$6x - 20 < 5x + (-2)(5) + (-2)(-3x)$$

$$6x - 20 < 5x - 10 + 6x$$

Subtract  $6x$  from both sides:

$$-20 < 5x - 10$$

Add 10 to both sides:

$$-10 < 5x$$

Divide both sides by 5:

$$-2 < x$$

This is equivalent to

$$x > -2$$

**102. (G)** The ratio is red:white:blue = 2:5:3.

Find the number of each color in a box of 30 paper clips.

$$2x + 3x + 5x = 30$$

$$10x = 30$$

$$x = 3$$

$$\text{Red: } 2x = 2(3) = 6$$

$$\text{White: } 5x = 5(3) = 15$$

$$\text{Blue: } 3x = 3(3) = 9$$

If one paper clip of each color is removed (3 total), there will be 8 blue paper clips out of 27 in the box. The probability that the next paper clip chosen will be blue is  $\frac{8}{27}$ .

**103. (B)** Each option is divisible by 1, 2, 3, 4, 5, and 6.

Option A:

1,680 is evenly divisible by the first 8 positive integers.

Option B:

840 is evenly divisible by the first 8 positive integers and is less than 1,680.

Option C:

480 is not evenly divisible by 7.

$$480 \div 7 = 68.57$$

Option D:

420 is not evenly divisible by 8.

$$420 \div 8 = 52.5$$

Option B (840) is the correct answer.

**104. (F)** One method of solving the problem is to use a table to represent the sample space. Let the three colors be red, blue, and green.

PAINT COLORS

Window Frame	Door	Wall
Red	Blue	Green
Red	Green	Blue
Blue	Red	Green
Blue	Green	Red
Green	Red	Blue
Green	Blue	Red

There are 6 possible combinations of colors for the window frame, the door, and the wall where no two parts are painted the same color.

- 105. (D)** Similar geometric figures have sides that are proportional.

$$\frac{10}{6} = \frac{x}{9}$$

$$\frac{5}{3} = \frac{x}{9}$$

$$x = \frac{(5)(9)}{3} = 15$$

Because  $MN = NP$ , both unknown sides are equal to 15. Therefore, the three sides of  $MNP$  are 15, 15, and 10. The perimeter of a triangle is the sum of its three side lengths.

$$15 + 15 + 10 = 40$$

- 106. (G)** First, analyze the role of each variable in the expression  $x^2yz^3|w|$ .

$x^2$  will always be a positive number.

$y$  can be a positive or a negative number.

$z^3$  can be a positive or a negative number.

$|w|$  will always be a positive number.

The expressions  $x^2$  and  $|w|$  will always be positive. Therefore, making the values of  $y$  and  $z$  negative would result in the expression  $yz^3$  being positive, since a negative multiplied by a negative is positive. Thus the given product would always be positive.

**107. (B)** Use the joint probability formula:

$P(\text{black shirt first}) \cdot P(\text{red shirt second, given black shirt first})$ .

Initially there are 3 black shirts out of 6 total shirts, so the probability of picking a black shirt first is  $\frac{3}{6}$ .

Once a black shirt is picked first, there is 1 red shirt out of 5 total shirts remaining.

So the probability of picking a red shirt second, given that a black shirt was picked first, is  $\frac{1}{5}$ .

Then  $P(\text{black shirt first}) \cdot P(\text{red shirt second, given black shirt first})$   
 $= \frac{3}{6} \cdot \frac{1}{5} = \frac{3}{30} = \frac{1}{10}$ .

**108. (E)** The volume of a cube with a side length of  $s$  is

$$V = s^3$$

Since 125 small cubes were used to build the large cube,  $125 = s^3$ .

Each side of the large cube is made up of 5 small cubes.

$$125 = 5^3$$

Since 5 small cubes make up each edge of the large cube, and the edge of each small cube measures 1 inch, the measure of each edge of the large cube is  $1 \times 5 = 5$  inches.

**109. (A)** The probability of Davina picking an odd-numbered ball from Box B is  $\frac{2}{3}$ . If Davina places an odd-numbered ball in Box A, then the probability of Yusuf picking an odd-numbered ball from Box A is  $\frac{1}{3}$ . The probability of both of these events happening is the product of the two probabilities.

$$\frac{2}{3} \times \frac{1}{3} = \frac{2}{9}$$

**110. (E)** Since  $|x + 1| \geq 2$ , either  
 $x + 1 \leq -2$  or  $x + 1 \geq 2$ .

Solving  $x + 1 \leq -2$  for  $x$  gives  $x \leq -3$ .

Solving  $x + 1 \geq 2$  for  $x$  gives  $x \geq 1$ .

A filled circle on a number line represents "or equal to." So the correct number line representation has filled circles at  $-3$  and  $1$ , with the number line filled to the left of  $-3$  for "less than" and to the right of  $1$  for "greater than."

**111. (D)** First, determine the area of the kitchen floor in square feet by multiplying the length and width:

$$12 \times 7.5 = 90 \text{ square feet}$$

Next, determine the area of each square tile:

$$0.75 \times 0.75 = \frac{3}{4} \times \frac{3}{4} = \frac{9}{16}$$

The number of tiles needed is found by dividing the area of the floor by the area of the tiles:

$$90 \div \frac{9}{16} = 90 \times \frac{16}{9} = 160$$

**112. (E)** First, determine the number of tickets sold on Sunday,  $x$ , using the total number of tickets sold on Saturday and Sunday, 30,000, and the number of tickets sold on Saturday,  $4x$ .

$$30,000 = 4x + x$$

$$30,000 = 5x$$

$$6,000 = x$$

Then determine the number of tickets expected to be sold on Monday,  $y$ , using the number of tickets sold on Sunday, 6,000.

$$6,000 = 3y$$

$$2,000 = y$$

The number of tickets expected to be sold on Monday is 2,000.

**113. (C)** The original area of the field was 4,000 square meters.

$$80 \times 50 = 4,000$$

When the field was enlarged, the length increased by 15%, so the new length is 92 meters.

$$80 \times 15\%$$

$$80 \times 0.15 = 12$$

$$80 + 12 = 92$$

The width increased by 10 meters, so the new width is 60 meters.

$$50 + 10 = 60$$

The new area of the field is 5,520 square meters.

$$92 \times 60 = 5,520$$

The percent increase is found by finding the difference between the two areas and dividing the increase by the original area.

$$5,520 - 4,000 = 1,520$$

$$1,520 \div 4,000 = 0.38 = 38\%$$

**114. (E)** Since  $x$  and  $y$  are both negative integers, both  $x^2$  and  $y^2$  are positive.

Therefore, both  $x^2y$  and  $xy^2$  are negative, and both  $-x^2y$  and  $-xy^2$  are positive.

Because  $x < y$  and both  $x$  and  $y$  are negative,  $|y| < |x|$  and  $y^2 < x^2$ . So  $|y^2| < |x^2|$ .

Since  $|y| < |x|$  and  $x$  and  $y$  are integers,  $|xy^2| < |x^2y|$ .

So  $x^2y < xy^2$ .

$$-xy^2 = |xy^2| \text{ and } -x^2y = |x^2y|$$

Therefore,  $x^2y < xy^2 < -xy^2 < -x^2y$ .

# Form B

## Sample Test – Answer Key

You can read explanations for each answer online here. If you are in 9th grade, you can find examples of additional types of math topics you might see on your test, here.

### Answer Key for Sample Form B

1. B	14. G	27. B	40. E	53. D	66. E	79. C	92. F	105. D
2. F	15. B	28. G	41. B	54. H	67. B	80. H	93. B	106. G
3. C	16. H	29. B	42. E	55. D	68. F	81. D	94. E	107. B
4. G	17. C	30. H	43. D	56. G	69. A	82. F	95. C	108. E
5. A	18. F	31. B	44. H	57. A	70. F	83. D	96. G	109. A
6. E	19. A	32. H	45. C	58. -0.8	71. B	84. F	97. C	110. E
7. B	20. H	33. B	46. F	59. 5	72. H	85. B	98. F	111. D
8. H	21. A	34. F	47. C	60. 95	73. D	86. G	99. A	112. E
9. D	22. E	35. C	48. E	61. 21	74. E	87. D	100. H	113. C
10. G	23. A	36. F	49. A	62. 32	75. D	88. G	101. D	114. E
11. B	24. E	37. B	50. F	63. A	76. E	89. C	102. G	
12. H	25. D	38. E	51. B	64. F	77. B	90. F	103. B	
13. D	26. H	39. D	52. G	65. C	78. E	91. A	104. F	