GRADE 8

A

NEW YORK CITY PUBLIC SCHOOLS

2018 Specialized High Schools

ADMISSIONS TEST

GENERAL DIRECTIONS

Identifying Information

Turn to Side 1 of the answer sheet. **Line 1** says, "I am well enough to take this test and complete it. I understand that once I break the seal of the test booklet, I may not be eligible for a make-up test. I am a New York City resident and a Grade 8 student taking a Grade 8 test. I understand that a student who is not a New York City resident, who takes the test more than once in a given school year, or who takes the test at the wrong grade level will be disqualified from acceptance to any of the specialized high schools." Sign your name in the space following the word "signature." Do not print your name. **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.**

On **Line 2**, print today's date, using the numbers of the month, the day, and the year. On **Line 3**, print your birth date with the number of the month first, then the number of the day, then the last two digits of the year. For example, a birth date of March 1, 2004, would be 3-1-04.

In **Grid 4**, print the letters of your first name, or as many as will fit, in the boxes. Write your name exactly as you did on the application. 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 is for your choice of specialized high schools. If Grid 5 is not marked correctly, your admission to a specialized high school will be affected because your admission is based on the score you achieve and the order in which you rank your school preferences in this grid. The school choices indicated on your answer sheet are final. Therefore, carefully copy the order in which you ranked the schools on your Test Ticket onto Grid 5.

Fill in one and only one circle for each school for which you wish to be considered. You may make as few as one or as many as eight choices. To increase your chances of being assigned to one of the specialized high schools, you are encouraged to make more than one choice. You **must** fill in a first choice school. Do not fill in a school more than once. Do not fill in the same school for each choice. Fill in only one circle in a row and only one circle in a column.

Grid 6 asks for 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.

In **Grid 7:**

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 and fill in the circle under the corresponding number or letter for each digit of the school code. (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 8 is labeled "STUDENT ID NUMBER." All test-takers should print their student ID number in Grid 8. The student ID number is found 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.

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TURN YOUR BOOKLET OVER TO THE BACK COVER

START SHSAT PREP

Identifying Information, continued

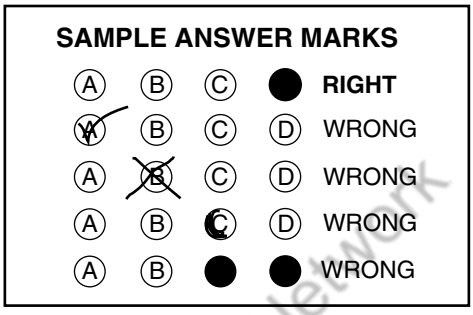
Grid 9 is labeled "BOOKLET LETTER AND NUMBER." In most cases, Grid 9 is already filled in for you. If it is not, copy the letter and numbers shown in the upper-right corner of your test booklet into the boxes. Below each box, fill in the circle containing the same letter or number as the box.

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. Print your test booklet letter and numbers, and your name, first name **first**, in the spaces provided.

Marking Your Answers

Mark each of your answers on the answer sheet in the row of circles corresponding to 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. 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. See the example of correct and incorrect answer marks below.



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.

DO NOT MAKE ANY MARKS ON YOUR ANSWER SHEET OTHER THAN FILLING IN YOUR ANSWER CHOICES.

Planning Your Time

You have 180 minutes to complete the entire test. How you allot 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.** If you complete the test before the allotted time (180 minutes) is over, you may go back to review questions in either section.

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. 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 time remains, you should check your answers.

Students must stay for the entire test session.

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START SHSAT PREP

A

PART 1 — ENGLISH LANGUAGE ARTS

57 QUESTIONS

REVISING/EDITING

QUESTIONS 1–9

IMPORTANT NOTE

The Revising/Editing section (Questions 1-9) is in two parts: 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 re-read relevant parts of the sentences or paragraphs before marking the best answer for each question.

1. Read this sentence.

> During a nightly news segment about a cooking contest, a reporter talked to some people who did the best in the contest.

Which revision uses the most precise language for the words ***talked to some people who did the best in the contest***?

A. conversed with some of the people who won the contest

B. spoke to the three contestants who did well

C. discussed the contest with some of the winners

D. interviewed the top three contestants

2. Read 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.

Which pair of revisions need to be made in the paragraph?

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**.

3. Read this paragraph.

> (1) Walking dogs, cleaning kennels, hand-feeding newborn kittens, and supporting the pet-adoption process, the animal shelter is looking for volunteers to help with a variety of tasks. (2) Working at the animal shelter is a great way for young people, especially those who aspire to care for and protect animals, to gain valuable work experience. (3) In addition to hands-on training with animal care, volunteers will learn important job skills, such as punctuality, responsibility, and personal initiative. (4) Caring for animals can also help volunteers develop empathy, which is the awareness and understanding of the feelings of others.

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

A. sentence 1

B. sentence 2

C. sentence 3

D. sentence 4

START SHSAT PREP

REVISING/EDITING Part B

DIRECTIONS: Read the text below and answer the questions following it. You will be asked to improve the writing quality of the text and to correct errors so that the text follows the conventions of standard written English. You should re-read relevant parts of the text before marking the best answer for each question.

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) By 2020 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.

4. 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.

5. 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.

6. 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

7. 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

START SHSAT PREP

READING COMPREHENSION

QUESTIONS 10–57

DIRECTIONS: Read each of the following six texts, and answer the related questions. You may write in your test booklet as needed to take notes. You should re-read relevant parts of each text before marking the best answer for each question. Base your answers only on the content within the text.

CONTINUE ON TO THE NEXT PAGE ►

An Early Warning

1 One of the books that has done the most to alert the world to the dangers of environmental degradation is George Perkins Marsh's *Man and Nature*. Its message—that Western society is in the process of causing irreparable harm to the environment—greatly influenced ecologists during the beginning of the modern environmentalist movement in the 1960s. Marsh was not, however, part of this movement. Surprisingly, *Man and Nature* was first published in 1864.

2 Marsh first observed the environmentally destructive effects of human activities while growing up in Vermont in the early nineteenth century. The heavy demand for firewood had depleted the forests, and extensive sheep grazing had stripped the land. The result was flooding and soil erosion. Furthermore, streams were fouled by wastes dumped from numerous mills and dye houses.

3 Much later in his life, after careers in law, business, farming, and politics, Marsh served as ambassador to Italy. There he noticed land abuse similar to what he had seen in Vermont. Overgrazing and forest mismanagement had rendered areas that had been productive farmland since the days of the Roman Empire desolate. Marsh attributed this to what he called "man's ignorant disregard for the laws of nature."

4 In Italy, Marsh began to organize his observations and theories. He wrote in a way intended to educate readers about the impact of industrial and agricultural practices on the environment. In *Man and Nature*, he evaluated the important relationships between animals and plants, discussed forestry practices in great detail, and analyzed the ways natural water supplies are affected by human use.

5 *Man and Nature* challenged the popular belief that nature can heal any damage that people inflict upon it. Marsh argued that people may use and enjoy, but not destroy, the riches of the earth.

6 Furthermore, he asserted that everything in nature is significant and that even the tiniest organism affects the fragile environmental balance. His belief that drastic alteration of this balance would be dangerous is now accepted as a fundamental principle of modern environmental science.

7 Although he pointed out environmental damage caused by irresponsible human activities, Marsh did not oppose every human alteration to the environment. To him, the goal was proper management, not a return to wilderness conditions. People should consider the consequences of their actions, he wrote, and become "co-worker[s] with nature." Marsh praised the Suez Canal, the human-made waterway between the Mediterranean Sea and the Gulf of Aden, as "the greatest and most truly cosmopolite physical improvement ever undertaken by man." He believed that the advantages of the canal—improved transportation and commerce—would outweigh any environmental damage. Yet he also warned of possible unintended consequences, such as destructive plants and animals spreading from one body of water to the other.

8 Marsh was considered a radical thinker during his lifetime. By the late nineteenth century, however, his writings, along with those of John Muir, Henry David Thoreau, and others, had inspired what became known as the conservation movement. The conservationists of that time sought to educate the public that wilderness areas were worth preserving and were responsible for creating the National Park Service and the National Forest Service.

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10. Which statement best describes the central idea of the passage?

E. Marsh's experience growing up on a farm allowed him to witness firsthand how human demands on nature can lead to problems, and as an adult he wrote one of the first books about conservation.

F. Marsh challenged the notion that nature can repair the damage people cause to it, but he also supported human-made modifications to nature that improve transportation and commerce.

G. Marsh's ideas about the environment were considered radical in his lifetime, but they later gained popularity during the environmental movement in the twentieth century.

H. Marsh was a radical thinker who believed that people's actions could dramatically affect nature, and his writings are considered foundational to the conservation movement.

11. Marsh believed that the people of his time caused harm to the environment because

A. they assumed that future generations would solve any environmental problems.

B. they thought industrial progress was more important than protecting nature.

C. they were unwilling to change farming and waste-disposal practices.

D. they lacked knowledge of nature and natural processes.

12. What is the most likely reason the author uses the word "surprisingly" in paragraph 1?

E. to argue that Marsh's ideas are more applicable in the present than they were during his lifetime

F. to show that Marsh introduced ideas a century before they became widely accepted

G. to emphasize that Marsh was unaware that his ideas would help begin a conservation movement

H. to prove that there would be fewer issues with the environment today if people had accepted Marsh's ideas earlier

13. Which evidence supports the accuracy of Marsh's theories about nature?

A. the details about Marsh's observations of environmental degradation

B. the details about how Marsh's writing inspired a conservation movement

C. the details about how Marsh's ideas are essential to modern environmental science

D. the details about Marsh's opinions on human alterations to the environment

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Champion of the Channel

1 In 1926 an editor at the *London Daily News* predicted that Gertrude Ederle, an American swimmer with eighteen world records and three Olympic medals, would fail in her attempt to swim across the English Channel. He claimed that "even the most uncompromising champion of the rights and capacities of women must admit that in contests of physical skill, speed and endurance they must remain forever the weaker sex." Yet, at only nineteen years old, Ederle not only became the first woman to accomplish this feat, she also broke the men's record by two hours. Gertrude Ederle's triumphant swim across the English Channel was a testimony to her determination, innovative spirit, and passion for swimming.

2 Crossing the English Channel is a daunting task for any swimmer. At its narrowest point, the channel measures twenty-one miles across. Its icy waters hover around sixty degrees Fahrenheit, and its unruly tides and currents toss swimmers about like bobbing corks. Stinging jellyfish, seaweed, and floating debris from shipwrecks and lost cargoes present added hazards.

3 For decades the channel's perils have defeated countless swimmers. Ederle, too, failed in her first attempt to cross the channel in 1925. Just six miles short of finishing, she became ill, and her coach had to haul her out of the water. Undeterred, Ederle decided to try again. Ederle knew that if she did not complete the challenge this time, she might never get the opportunity to set this record, because a rival female swimmer was preparing to make her second attempt at the crossing as well.

4 To prepare for the marathon swim, Ederle found ways to improve her equipment. She and her sister Meg discovered that melted candle wax perfectly sealed goggle edges, effectively waterproofing Ederle's goggles against hammering waves. The sisters also designed a two-piece silk swimsuit for Ederle. During her first channel-crossing attempt she had worn a standard one-piece swimsuit that, after the lengthy hours of swimming across the channel, had stretched out, filling with water and creating drag, making an already challenging task almost insurmountable. Unlike the cumbersome typical bathing suit, this silk invention weighed little and allowed for easy movement.

5 On August 6, 1926, Ederle waded into the channel near Cape Gris-Nez, France. At first she shivered in the bone-chilling water even though she had covered her body in eight layers of grease for insulation. Her limbs felt stiff. Her strokes were irregular. Driving forward, she fought to clear her mind and find what she called her "sphere," a place where the sea became her only companion and the shrieks of gulls and the humming of boat engines faded away. Using a new overhand stroke called the American crawl, Ederle eventually settled into a steady pace, briskly breaking through waves.

6 Throughout Ederle's swim, two tugboats accompanied her. One carried newspaper reporters who wired dispatches of her progress to shore. The other, displaying a sign that read "This way, ole kid!" with an arrow pointing forward, transported her coach, family, and friends. Her coach played songs, such as "Yes, We Have No Bananas," on a phonograph so that Ederle could time her strokes to the rhythm. Using a net, her coach also passed her baby bottles of broth for nourishment.

7 For hours Ederle swam, dodging debris with an amused smile. However, as she neared the English shore, a sudden fierce storm erupted. The tides and waves forced Ederle backward, and she fought the stubborn swells for several hours. The salty water caused her tongue to swell and inflamed her ears. Yet Ederle felt indescribably happy as she churned through the sea. Finally, as she neared the English shore, the storm abated, and the tide turned. No longer fighting against her, the sea pushed her toward the shore and victory.

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8 After fourteen hours and thirty-one minutes, Ederle, on wobbly legs, stepped onto the English shore. The waiting crowd roared, honked their automobile horns, blasted their tugboat whistles, and set off flares that flashed in the sky. Ederle had swum into history.

9 When Ederle returned to New York, she received a parade, where thousands of people shouted "Trudy!" Not only were everyday American citizens proud of Ederle, but she also inspired them to be more active. Over the next few years, more than 60,000 people credited her with motivating them to earn their American Red Cross swimming certificates. Gertrude Ederle's accomplishment proved to the world that with determination and passion, it was possible for a person to achieve his or her goals.

SOLO SWIMS ACROSS THE ENGLISH CHANNEL

Earliest Speed Records		
Year	**Swimmer**	**Time**
1875	Matthew Webb (M)	21 hours, 45 minutes
1923	Enrico Tiraboschi (M)	16 hours, 33 minutes
1926	Gertrude Ederle (F)	14 hours, 31 minutes
1926	Arnst Vierkotter (M)	12 hours, 38 minutes
Current Speed Records		
Year	**Swimmer**	**Time**
2012	Trent Grimsey (M)	6 hours, 55 minutes
2006	Yvetta Hlavacova (F)	7 hours, 25 minutes

16. Read this sentence from paragraph 1.

> **In 1926 an editor at the *London Daily News* predicted that Gertrude Ederle, an American swimmer with eighteen world records and three Olympic medals, would fail in her attempt to swim across the English Channel.**

What does the editor's comment reveal about the challenges Ederle faced in attempting her feat?

E. Regardless of her ability, being an American put Ederle at a serious disadvantage over a Londoner, who would be more familiar with the English Channel.

F. At the time, Ederle still needed more training in order to succeed in the daunting task of swimming the English Channel.

G. While Ederle could participate in athletic competition, some people were not comfortable with her attempt to swim the channel because no woman had ever attempted it before.

H. In spite of her previous achievements, Ederle still experienced social as well as physical obstacles in attempting to swim the channel.

START SHSAT PREP

20. In paragraph 4, the word "insurmountable" is used to highlight

E. how the bathing suit made it impossible for Ederle to make it across the channel.

F. how Ederle and her sister decided to improve Ederle's swimming equipment in a creative way.

G. that the flaws in Ederle's bathing suit made a difficult task even more complicated.

H. that the swimming equipment Ederle used needed to be custom made for her attempt.

21. Which statement describes how the author's use of problem-and-solution in paragraph 5 contributes to the development of ideas in the passage?

A. Detailing the challenges that the cold channel waters presented highlights how effective Ederle's training was.

B. Describing Ederle's physical difficulties during her swim provides evidence of the team effort required in order to ensure her safety.

C. Explaining the difficulties that arose early in the effort helps predict the additional problems that occurred during Ederle's attempt.

D. Illustrating Ederle's process of blocking out her discomfort shows that swimming the channel was both a mental and a physical challenge.

22. Paragraph 7 contributes to the development of the central idea of the passage by

E. illustrating that Ederle's physical strength and mental fortitude allowed her to stay focused on her goal.

F. conveying that Ederle pushed herself to the edge of her physical capabilities in order to complete the swim.

G. highlighting the impact the severe weather had on Ederle's emotions during her swim.

H. emphasizing the surge of emotions Ederle felt as she came closer to achieving a personal goal.

23. Ederle's victorious swim across the English Channel influenced American attitudes mainly by

A. sparking interest in physical activity and in seeking swimming certification.

B. encouraging other swimmers to seek out and achieve challenging feats.

C. demonstrating that women could achieve and even surpass feats accomplished by men.

D. showing that determination and perseverance are necessary to overcome previous failures.

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24. Which sentence from the passage best conveys the author's perspective regarding the impact of Ederle's accomplishment?

E. "Gertrude Ederle's triumphant swim across the English Channel was a testimony to her determination, innovative spirit, and passion for swimming." (paragraph 1)

F. "For hours Ederle swam, dodging debris with an amused smile." (paragraph 7)

G. "Yet Ederle felt indescribably happy as she churned through the sea." (paragraph 7)

H. "Ederle had swum into history." (paragraph 8)

25. The table contributes to the development of the topic of the passage mainly by

A. emphasizing that people have continued to swim across the channel and have significantly reduced the speed record.

B. suggesting that Ederle inspired women to swim across the channel in an attempt to break the current speed record.

C. revealing that Ederle is not the only woman who has set a record time for swimming across the English Channel.

D. providing a comparison between channel-swimming records of the early twentieth century and current records.

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Excerpt from *A Tramp Abroad*

by Mark Twain

1 Now and then, while we[1] rested, we watched the laborious ant at his work. I found nothing new in him—certainly nothing to change my opinion of him. It seems to me that in the matter of intellect the ant must be a strangely overrated bird. During many summers now I have watched him, when I ought to have been in better business, and I have not yet come across a living ant that seemed to have any more sense than a dead one. I refer to the ordinary ant, of course; I have had no experience of those wonderful Swiss and African ones which vote, keep drilled armies, . . . and dispute about religion. Those particular ants may be all that the naturalist paints them, but I am persuaded that the average ant is a sham.

2 I admit his industry, of course; he is the hardest working creature in the world—when anybody is looking—but his leather-headedness is the point I make against him. He goes out foraging, he makes a capture, and then what does he do? Go home? No; he goes anywhere but home. He doesn't know where home is. His home may be only three feet away; no matter, he can't find it. He makes his capture, as I have said; it is generally something which can be of no sort of use to himself or anybody else; it is usually seven times bigger than it ought to be; he hunts out the awkwardest place to take hold of it; he lifts it bodily up in the air by main force, and starts—not toward home, but in the opposite direction; not calmly and wisely, but with a frantic haste which is wasteful of his strength; he fetches up against a pebble, and, instead of going around it, he climbs over it backwards, dragging his booty after him, tumbles down on the other side, jumps up in a passion, kicks the dust off his clothes, moistens his hands, grabs his property viciously, yanks it this way, then that, shoves it ahead of him a moment, turns tail and lugs it after him another moment, gets madder and madder, then presently hoists it into the air and goes tearing away in an entirely new direction; comes to a weed; it never occurs to him to go around it. No; he must climb it, and he does climb it, dragging his worthless property to the top—which is as bright a thing to do as it would be for me to carry a sack of flour from Heidelberg to Paris by way of Strasburg steeple; when he gets up there he finds that that is not the place; takes a cursory glance at the scenery, and either climbs down again or tumbles down, and starts off once more—as usual, in a new direction. At the end of half an hour he fetches up within six inches of the place he started from, and lays his burden down. Meantime, he has been over all the ground for two yards around, and climbed all the weeds and pebbles he came across. Now he wipes the sweat from his brow, strokes his limbs, and then marches aimlessly off, in as violent a hurry as ever. He traverses a good deal of zig-zag country, and by and by stumbles on his same booty again. He does not remember to have ever seen it before; he looks around to see which is not the way home, grabs his bundle, and starts. He goes through the same adventures he had before; finally stops to rest, and a friend comes along.

3 Evidently the friend remarks that a last year's grasshopper leg is a very noble acquisition, and inquires where he got it. Evidently the proprietor does not remember exactly where he did get it, but thinks he got it "around here somewhere." Evidently the friend contracts to help him freight it home. Then, with a judgment peculiarly antic (pun not intentional), they take hold of opposite ends of that grasshopper leg and begin to tug with all their might in opposite directions. Presently they take a rest, and confer together. They decide that something is wrong, they can't make out what. Then they go at it again, just as before. Same result. Mutual recriminations follow. Evidently each accuses the other of

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[1] **we:** the author and his fictional travel companion

being an obstructionist. They warm up, and the dispute ends in a fight. They lock themselves together and chew each other's jaws for a while; then they roll and tumble on the ground till one loses a horn or a leg and has to haul off for repairs. They make up and go to work again in the same old insane way, but the crippled ant is at a disadvantage; tug as he may, the other one drags off the booty and him at the end of it. Instead of giving up, he hangs on, and gets his shins bruised against every obstruction that comes in the way. By and by, when that grasshopper leg has been dragged all over the same old ground once more, it is finally dumped at about the spot where it originally lay. The two perspiring ants inspect it thoughtfully and decide that dried grasshopper legs are a poor sort of property after all, and then each starts off in a different direction to see if he can't find an old nail or something else that is heavy enough to afford entertainment and at the same time valueless enough to make an ant want to own it. . . .

4 Science has recently discovered that the ant does not lay up anything for winter use. . . . He does not work, except when people are looking, and only then when the observer has a green, naturalistic look, and seems to be taking notes. This amounts to deception, and will injure him for the Sunday schools. He has not judgment enough to know what is good to eat from what isn't. This amounts to ignorance, and will impair the world's respect for him. . . . He cannot stroll around a stump and find his way home again. This amounts to idiocy, and once the damaging fact is established, thoughtful people will cease to look up to him. It is strange beyond comprehension that so manifest a humbug as the ant has been able to fool so many nations and keep it up so many ages without being found out.

From A TRAMP ABROAD by Mark Twain—Public Domain

26. The phrase "those wonderful Swiss and African ones which vote, keep drilled armies, . . . and dispute about religion" in paragraph 1 shows that the author

E. believes that the behavior of the ants is reflected in other living creatures.
F. acknowledges that his observations of a few do not necessarily apply to all.
G. knows that disproving a commonly held belief is challenging.
H. accepts that there are flaws in his interpretation of the behavior of the ants.

27. The central idea that "the average ant is a sham" (paragraph 1) is conveyed mainly through the

A. comical descriptions of the inability of the ants to accomplish the task at hand.
B. comparison between ants from other countries and the ants being observed.
C. keen observations that the level of intelligence of ants is mostly overstated.
D. conclusion that ants value objects that are of little practical use to them.

START SHSAT PREP

28. In paragraph 2, how do the words "grabs," "yanks," and "tearing away" contribute to the meaning of the excerpt?

E. They highlight the ant's belief that his work is important.

F. They illustrate that the ant is more efficient working on his own.

G. They indicate the speed with which the ant completes his tasks.

H. They emphasize the ant's anxious efforts to be productive.

29. Read this text from paragraph 2.

> **He . . . comes to a weed; it never occurs to him to go around it. No; he must climb it, and he does climb it, dragging his worthless property to the top—which is as bright a thing to do as it would be for me to carry a sack of flour from Heidelberg to Paris by way of Strasburg steeple;**

These details convey the central idea in the excerpt by showing that the ant

A. often wastes his strength when working on a task.

B. is surprised by the effort he needs in order to move the object.

C. is oblivious to the most practical solution to his problem.

D. focuses more on obtaining the object than getting it back home efficiently.

30. Which of the following best explains the author's fascination with the ants?

E. "During many summers now I have watched him, when I ought to have been in better business, and I have not yet come across a living ant that seemed to have any more sense than a dead one." (paragraph 1)

F. "I admit his industry, of course; he is the hardest working creature in the world—" (paragraph 2)

G. "Science has recently discovered that the ant does not lay up anything for winter use." (paragraph 4)

H. "It is strange beyond comprehension that so manifest a humbug as the ant has been able to fool so many nations and keep it up so many ages without being found out." (paragraph 4)

START SHSAT PREP

34. Read this sentence from paragraph 3.

> **The two perspiring ants inspect it thoughtfully and decide that dried grasshopper legs are a poor sort of property after all, and then each starts off in a different direction to see if he can't find an old nail or something else that is heavy enough to afford entertainment and at the same time valueless enough to make an ant want to own it.**

How does the word choice in the sentence contribute to the overall meaning of the excerpt?

E. It creates a humorous critique of the ants' intense attitude toward their pointless work.

F. It illustrates the ants' confusion over their lack of positive results compared with their level of effort.

G. It highlights the ants' frustration as they repeatedly chose a difficult task over one that could be accomplished more easily.

H. It illustrates the ants' stubborn determination to hold on to the worthless object.

35. How does the presence of the friend in paragraph 3 influence the first ant's behavior?

A. The friend distracts the ant from finding the correct path home.

B. The friend inspires the ant to consider a new approach to the situation.

C. The friend encourages the ant to continue his worthless efforts.

D. The friend tries to prevent the ant from finishing his task.

START SHSAT PREP

CONTINUE ON TO THE NEXT PAGE ►

START SHSAT PREP

Ruins of a Fabled City

1 The African country of Zimbabwe took its name from the Shona word meaning "stone enclosures" or "venerated houses." In fact, today dozens of stone ruins are scattered throughout Zimbabwe and other areas in southeastern Africa. One of these ruins, known as Great Zimbabwe, was once a fabled city that inspired tales that circulated throughout Europe. Where was this remarkable city, and who had built it? For centuries the mystery occupied the minds of explorers and treasure seekers.

2 The first reports to Europeans of Great Zimbabwe were spread a thousand years ago by Arab traders sailing between the Middle East and the east coast of Africa. The traders told of the fabulous wealth of a mysterious stone city in the African interior. In the trader's tales, that city became associated with the Europeans' understanding of Middle Eastern history—the Queen of Sheba, King Solomon and his legendary gold mines, long since lost to the world. By the sixteenth century, Portuguese explorers regularly visited East Africa, searching for King Solomon's gold, but they never found Great Zimbabwe. In 1552, a Portuguese historian, João de Barros, recorded a story told by Arabs about a city with a "square fortress of masonry within and without, built of stones of marvelous size, and there appears to be no mortar joining them."

3 In fact, Great Zimbabwe *was* a marvel. In one area a massive wall more than thirty feet high and twenty feet thick created a great enclosure. Another area contained a fortress-like series of walls, corridors, and steps built into the bluff that overlooks the ruins. Throughout the city, each stone was precisely fitted to the others without the use of mortar.

4 In the 1870s Karl Mauch, a German geologist, was the first European to see Great Zimbabwe, by then in ruins. Mauch realized that he had "rediscovered" the fabled city from de Barros's story. He jumped to the conclusion that Great Zimbabwe had been built by the Queen of Sheba. British authorities sent a British journalist, Richard Hall, to Great Zimbabwe to investigate Mauch's report. Archaeology was still in its infancy, and Hall, convinced that the structures had been built by ancient people from the Middle East, dug up and discarded archaeological deposits that would have revealed much about the true history of Great Zimbabwe. Later European excavations destroyed even more valuable evidence.

5 In the twentieth century, after excavating areas that had not been disturbed, David Randall-MacIver, a Scottish Egyptologist, and Gertrude Caton-Thompson, an English archaeologist, concluded that the ruins were unmistakably African in origin. Great Zimbabwe was most likely built during the fourteenth or fifteenth century by the ancestors of the present-day Shona people. Recent carbon-14 dating supports their conclusion. Great Zimbabwe was once home to an estimated 20,000 people, the center of a great Shona kingdom. Wealthy Shona kings traded their ivory and gold in coastal towns for other goods, thus accounting for the discovery of beads and other foreign wares in the ruins.

6 One mystery of Great Zimbabwe had been solved. Another mystery remains: why was the settlement at Great Zimbabwe abandoned, leaving the magnificent stone architecture to fall into ruins?

START SHSAT PREP

36. Which statement best describes the central idea of the passage?

E. Great Zimbabwe was an enormous stone city thought to be home to some of the greatest treasure of ancient history.

F. Mysteries related to Great Zimbabwe continue to interest historians and explorers even though archaeologists have confirmed its origins.

G. The history of Great Zimbabwe was subject to much speculation until modern archaeologists definitively determined its origins.

H. Early missteps in the study and excavation of the Great Zimbabwe ruins led to the loss of valuable evidence about the city.

37. What was the main way that Karl Mauch's conclusions about Great Zimbabwe in paragraph 4 affected later archaeological investigations?

A. Archaeologists from all over Europe became interested in excavating the area.

B. Archaeologists made assumptions about the history of the ruins before excavating.

C. Archaeologists started to believe that many of the past accounts recorded about the ruins were true.

D. Archaeologists realized it was unlikely that an ancient culture could build such grand structures.

38. Which statement best describes Portuguese explorers' experience searching for Great Zimbabwe?

E. They routinely visited East Africa but never located the city.

F. They were motivated by the hope of finding a mysterious city.

G. They used details from de Barros's story in order to determine the city's exact location.

H. They studied history books in order to gather information about the city.

39. What was "one mystery of Great Zimbabwe" (paragraph 6) that had been solved?

A. why the settlement was abandoned

B. where the ivory and gold from the city went

C. why the ruins remained undiscovered until the 1870s

D. who had built the settlement

START SHSAT PREP

Cross-Purposes

What I am is *built*: concrete and steel.
I defy gravity. I am what every athlete
wants: to remain at the apex of the leap,
up in the air. And yet I am useful, too:
cars, trucks, people, even trains
make their way across my broad back.
Swallows and ospreys[1] nest in my trusses.

What I am is motion. I am water, and I am older
than anything else you know. No human
built me. I am gravity's best friend; I pool
and flow wherever gravity takes me.
I am the blood flowing in the runner's chest,
and I catch everything: from the hills,
the mountains. It all washes down through me.

What you are is an *accident*,
what happens to rain when rain gives in
to Earth's gravitational pull.
You are some tears dribbling from a mountain's
eye, running down the pavements
of small towns, into the cities, to the sea.
You are the path of least resistance.

What I am is power. You, of course,
have none: you are a static lump, an artifact
slowly decaying. But my regal flow
nourishes grasses, permits empires to rise.
Those who made you will break you,
in time, replacing you with yet another
clumsy structure. I have seen. I know.

"Clumsy"? Being rebuilt makes me
a friend of time, does it not? And it means
that I have siblings—those "clumsy" structures,
my sisters and brothers.
We stitch across the rip you make.
We are steel thread to the human needle.
We bind you up. We sew you.

[1] **ospreys:** large birds

START SHSAT PREP

And I sow into you; in every cranny
of your superstructure my vapors cling.
They bring out your softness, your rust.
Boast your best, and boast better yet.
I am listening to the bright hum
of the wind in your wires. Because I am,
above all else, patient. I will wait for you.

42. How does the similar construction of the sentence in line 1 and the sentence in line 8 contribute to the meaning of the poem?

E. It introduces the intended permanence of the structure and the ever-changing fluidity of the water.

F. It shows that the structure can bridge the gap caused by the water.

G. It suggests that the structure has more limitations than the water.

H. It contrasts the stability of the structure with the instability of the water.

43. Read lines 2–4 and lines 12–14 from the poem.

I am what every athlete
wants: to remain at the apex of the leap,
up in the air.

I am the blood flowing in the runner's chest,
and I catch everything: from the hills,
the mountains.

How do the lines contribute to the development of a central idea of the poem?

A. They establish that both the structure and the water have endurance and control.

B. They highlight that both the structure and the water are powerful and impressive.

C. They suggest that the structure and the water are unaware of how similar they are.

D. They reveal that the structure and the water are surprised that they are interrelated.

44. Read line 7 from the first stanza.

Swallows and ospreys nest in my trusses.

How does the line contribute to the development of ideas in the stanza?

E. The line supports the structure's claim that it is beneficial to nature.

F. The line reveals that the structure secretly envies the water's importance in nature.

G. The line emphasizes that the structure is more valuable to nature than the water is.

H. The line reveals the kinship that nature shares with the structure.

START SHSAT PREP

45. Read lines 18–20 from the poem.

> **You are some tears dribbling from a mountain's**
> **eye, running down the pavements**
> **of small towns, into the cities, to the sea.**

What impact do the phrases "some tears dribbling" and "running down" have on the meaning of the poem?

A. They suggest that naturally flowing water is a problem in populated areas.

B. They highlight the different types of naturally flowing water.

C. They imply that the flow of water is weak and influenced by the landscape.

D. They highlight that the flow of water from the mountains is minimal compared with that of the seas.

46. The comparison to sewing in lines 33–35 helps show that the structure

E. enhances the beauty of the natural landscape.

F. brings people together more effectively than nature does.

G. provides clear boundaries for natural environments.

H. serves as a means for people to overcome an obstacle created by nature.

47. The last stanza (lines 36–42) conveys a central idea of the poem by

A. demonstrating that both the structure and the water depend on each other to fulfill their functions.

B. implying that a stronger structure would be able to resist the degradation caused by the water.

C. revealing that the passage of time will render both the structure and the water obsolete.

D. suggesting that the water will eventually weaken the structure and will continue to exist after the structure is gone.

48. Read lines 41–42 from the poem.

> ***Because I am,***
> ***above all else, patient. I will wait for you.***

Which of the following supports what is implied in these lines?

E. "*I am older / than anything else you know.*" (lines 8–9)

F. "*No human / built me.*" (lines 9–10)

G. "*It all washes down through me.*" (line 14)

H. "*Those who made you will break you,*" (line 26)

START SHSAT PREP

If you have ever watched someone fall on the ice, you've seen slipperiness at work. But have you wondered what makes ice slippery, or why skates or skis glide across ice so easily? The answer might seem obvious: ice is smooth. Yet smoothness in itself does not explain slipperiness. Imagine, for example, skating on a smooth surface of glass or sheet metal.

Surprisingly, scientists do not fully understand why ice is slippery. Past explanations of slipperiness have focused on friction and pressure. According to the friction theory, a skate blade rubs across the ice, causing friction. The friction produces heat, melting the ice and creating a slippery, microscopically thin layer of water for the skate to glide on. Scientists agree, however, that friction alone cannot explain why ice is slippery even when someone stands completely motionless on it.

The pressure theory claims that pressure from a skate blade melts the ice surface, creating a slippery layer of water. The water refreezes when the pressure is lifted. Science textbooks typically cite this explanation, but many scientists disagree, claiming that the pressure effect is not great enough to melt the ice. Nor can the pressure theory explain why someone wearing flat-bottomed shoes—which have a greater surface area than skate blades and thus exert less pressure per square inch—can glide across the ice or even go sprawling.

During the 1990s, another theory found acceptance: the thin top layer of ice is liquid, or "liquid-like," regardless of friction or pressure. This notion was first proposed more than 150 years ago by physicist Michael Faraday. Faraday's simple experiment illustrates this property: two ice cubes held against each other will fuse together. This happens, Faraday explained, because liquid on the cubes' surfaces froze solid when the surfaces made contact.

Faraday's hypothesis was overlooked, in part because scientists did not have the means to detect molecular structures. However, technological advances during recent decades allow scientists to measure the thin layer on the surface of the ice. For example, in 1996, a chemist at Lawrence Berkeley Laboratory shot electrons at an ice surface and recorded how they rebounded. The data suggested that the ice surface remained "liquid-like," even at temperatures far below freezing. Scientists speculate that water molecules on the ice surface are always in motion because there is nothing above them to hold them in place. The vibration creates a slippery layer of molecules. According to this interpretation of the Lawrence Berkeley laboratory experiment, [illegible] side to side. They would constitute a true [illegible] one said that people are [illegible] molecules!

The phenomenon of a slippery liquid-like surface is not limited to ice, although ice is the most common example. Lead crystals and even diamond crystals, made of carbon, also show this property under certain temperature and pressure conditions.

45. Which of the following best tells what this passage is about?

A. why ice surfaces are liquid-like
B. how ice changes from a solid to a liquid
C. answers to the question of what makes ice slippery
D. the discoveries of Michael Faraday
E. the processes of freezing and melting

CONTINUE ON TO THE NEXT PAGE ►

The Year without a Summer

1 The eruption of the Philippine volcano Mount Pinatubo in June 1991 sent a huge cloud of gas and dust encircling the globe. The dust and ash from Mount Pinatubo was blamed for a two-year decrease in global temperature, changes in weather patterns, and damage to the ozone layer. The situation brings to mind a time now remembered as "The Year without a Summer," a meteorological event that occurred 175 years earlier. At that time, harsh weather conditions plagued much of eastern North America and, to a lesser extent, northern Europe.

2 April 1816 brought typical spring weather to upstate New York and New England; trees budded, and farmers prepared to plow and plant. In May, however, the expected warm temperatures failed to arrive. Most people remained optimistic, waiting for the summer that was "just around the corner." They waited in vain. During the first week of June, ten inches of snow fell on New England. Throughout the month, temperatures rarely rose above the 30s. Many farmers replanted crops several times, only to see them stunted or destroyed by sleet, hail, and icy winds. July and August brought little improvement. During most days the temperature stayed in the 40s. Farmers' diaries document the farmers' daily struggles with near-freezing temperatures, failing crops, and dying farm animals. The few crops that managed to survive were killed by frost in mid-September. Winter came early in New England and was unusually severe. Even the South was affected; on July 4, the high temperature for Savannah, Georgia, was only 46 degrees Fahrenheit!

3 Some religious leaders warned their congregations that the unusual weather meant that the end of the world was drawing near. Other leaders attributed the cool weather to unusual sunspot activity. The proliferation of the newly invented lightning rod was also blamed as some people believed that lightning rods had interrupted the natural temperature balance of Earth, causing the cooler temperatures.

4 It was not until October that the first plausible explanation for "The Year without a Summer" was suggested. Friedrich Bessel, a German astronomer, reported seeing thick clouds of dust in the upper atmosphere. He theorized that these dust particles screened portions of Earth from the warming rays of the sun. It was discovered that in April 1815, Mount Tambora, an Indonesian volcano, had erupted with such force that it had sent an estimated 100 cubic miles of fine dust into the atmosphere. Witnesses to the eruption reported that the sky remained dark for two days. The dust then rose high into the stratosphere, where it encircled the world for several years to come.

5 Skeptics in 1816 doubted that a faraway volcano could steal their summer. However, most present-day researchers believe Bessel's explanation to be generally correct, demonstrating the global nature of weather. The dust in the atmosphere eventually settled, and the spring of 1817 was back to normal.

51. Which of the following best tells what this passage is about?

A. the belief of some religious leaders that the end of the world was coming in 1816
B. a summer of strange weather and its probable cause
C. the importance of summer weather to agriculture in New England
D. a comparison of the weather of 1816 and 1991

START SHSAT PREP

52. What is the most likely reason farmers persisted in replanting their crops?

E. They believed that the cold weather could not continue all summer long.
F. They thought that crops would be able to survive even though the weather remained cold.
G. They believed that the improved weather conditions of July would last.
H. They thought the June snowfalls would provide needed moisture.

53. In the winter that followed the summer of 1816, New Englanders most likely experienced

A. new weather events that they had not encountered before.
B. temperatures that were warmer than usual for that time of year.
C. shortages of fruits, vegetables, and other essential crops.
D. difficulty adjusting to a different timeline for planting crops.

54. How does paragraph 3 contribute to the passage?

E. It presents the most probable cause of the 1816 weather.
F. It shows how nineteenth-century people explained the 1816 weather.
G. It presents a theory about the 1816 weather that some skeptics doubted.
H. It includes eyewitness reports to describe the source of the 1816 weather.

55. The author includes the details in paragraph 4 about the eruption of Mount Tambora in order to

A. suggest that the aftermath of the eruption still affects the environment today.
B. highlight the severe impact that the eruption had on the atmosphere.
C. provide a description of what happens during a volcanic eruption.
D. emphasize how differently people perceive natural events in various parts of the world.

START SHSAT PREP

56. Which of the following is implied by the phrase "the global nature of weather" (paragraph 5)?

E. Understanding weather events around the world is important for making weather predictions.

F. Extreme weather conditions in some parts of the world can have a lasting impact on a geographical area.

G. Natural disasters tend to occur in different parts of the world at the same time.

H. Conditions in one part of the world can affect weather in another part of the world.

57. The cold summer of 1816 was most likely caused by

A. unusual sunspot activity.

B. the excessive use of lightning rods.

C. damage to the ozone layer.

D. an increase of dust in the atmosphere.

START SHSAT PREP

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 figured out 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, (on a graph) lines that appear to be parallel can be assumed to be parallel; likewise for concurrent lines, straight lines, collinear points, right angles, etc.

(5) Reduce (simplify) all fractions to lowest terms.

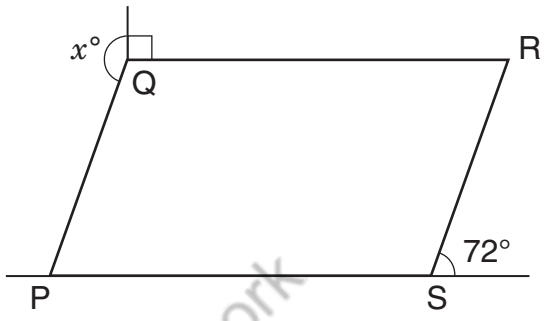
START SHSAT PREP

GRID-IN QUESTIONS

QUESTIONS 58–62

DIRECTIONS: Solve each question. 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.



In the figure above, PQRS is a parallelogram. What is the value of x?

59. The owner of a tree farm plants pine trees and oak trees in a ratio of 8:3. How many oak trees are planted if 264 pine trees are planted?

60. For what value of w is $4w = 2w - 8$?

61. A survey asked students what pets they have. Based on the results, the following statements are all true.

- 20 students have cats.
- 23 students have dogs.
- 3 students have both dogs and cats.
- 5 students have no dogs or cats.

How many students were surveyed?

62. The sum of two consecutive integers is -15. If 1 is added to the smaller integer and 2 is subtracted from the larger integer, what is the **product** of the two resulting integers?

START SHSAT PREP

MULTIPLE CHOICE QUESTIONS

QUESTIONS 63–114

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

63. The set of possible values of m is {5, 7, 9}. What is the set of possible values of k if $2k = m + 3$?

A. {3, 4, 5}
B. {4, 5, 6}
C. {8, 10, 12}
D. {10, 14, 18}

64. $7 + (3n + 6) - (4n + 8) =$

E. $5 - n$
F. $5 + n$
G. $21 - n$
H. $21 + n$

65. In a certain school, course grades range from 0 to 100. Adrianna took 4 courses and her mean course grade was 90. Roberto took 5 courses. If both students have the same sum of course grades, what was Roberto's mean?

A. 72
B. 80
C. 90
D. 92

66. Jenny starts a game with twice as many marbles as Keiko. Jenny gives Keiko 5 marbles, but she still has 10 more than Keiko. How many marbles did Jenny have to start with?

E. 25
F. 30
G. 35
H. 40

67. In a scale diagram, 0.125 inch represents 125 feet. How many inches represent 1 foot?

A. 0.001
B. 0.01
C. 0.1
D. 0.12

START SHSAT PREP

68.

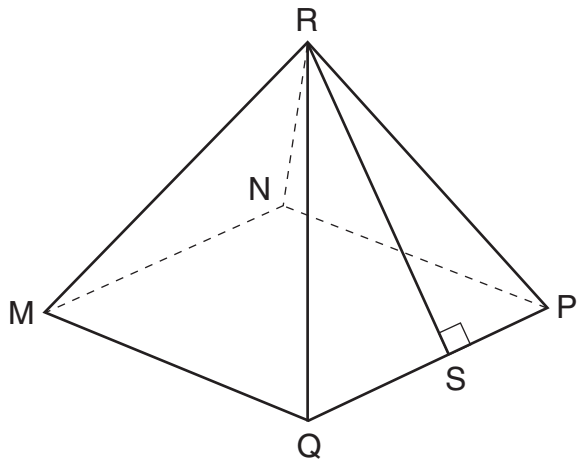
PEOPLE PER VEHICLE AT CHECKPOINT

Number of People in Vehicle	Percent of Vehicles
1	40%
2	35%
3	15%
4	7%
5 or more	3%

A researcher recorded the number of people in each vehicle that passed through a checkpoint. The table above shows the percent distribution for the 420 vehicles that passed through the checkpoint yesterday morning. How many of the 420 vehicles contained **at least** 3 people?

E. 42
F. 63
G. 105
H. 315

69.



In the pyramid above, each triangular face has the same area, and the base MNPQ is a square that measures 8 centimeters on each side. If the length of $\overline{RS}$ = 6 centimeters, what is the surface area of the pyramid **excluding** the base?

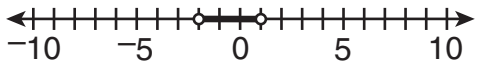
A. 48 sq cm
B. 96 sq cm
C. 128 sq cm
D. 160 sq cm

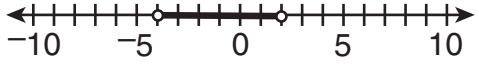
70. The perimeter of a rectangle is 510 centimeters. The ratio of the length to the width is 3:2. What are the dimensions of this rectangle?

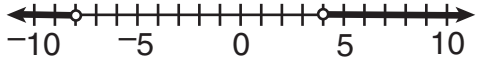
E. 150 cm by 105 cm
F. 153 cm by 102 cm
G. 158 cm by 97 cm
H. 165 cm by 90 cm

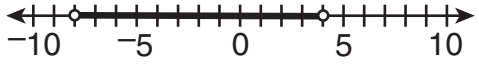
START SHSAT PREP

71. Which number line below shows the solution to the inequality $-4 < \frac{x}{2} < 2$?

A.


B.


C.


D.


72.

1 dollar = 7 lorgs
1 dollar = 0.5 dalt

Kevin has 140 lorgs and 16 dalts. If he exchanges the lorgs and dalts for dollars according to the rates above, how many dollars will he receive?

E. $28
F. $52
G. $182
H. $282

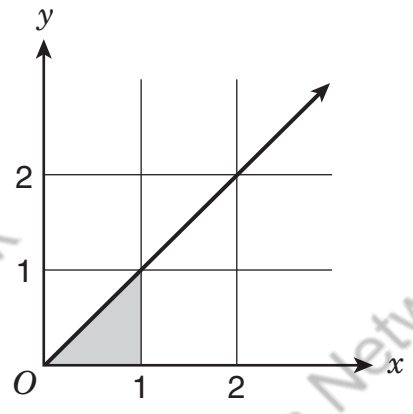
73. A box of colored pencils contains exactly 6 red pencils. The probability of choosing a red pencil from the box is $\frac{2}{7}$. How many of the pencils in the box are **not** red?

A. 5
B. 15
C. 21
D. 30

74. The sum of the numbers x, y, and z is 50. The ratio of x to y is 1:4, and the ratio of y to z is 4:5. What is the value of y?

E. 4
F. 8
G. 10
H. 20

75.



What is the area of the shaded region in the graph above?

A. 0.25 square unit
B. 0.5 square unit
C. 1 square unit
D. 1.5 square units

76. In Centerville, 45% of the population is female, and 60% of the population commutes to work daily. Of the total Centerville population, 21% are females who commute to work daily. What percentage of the total Centerville population are males who do **not** commute to work daily?

E. 15%
F. 16%
G. 24%
H. 39%

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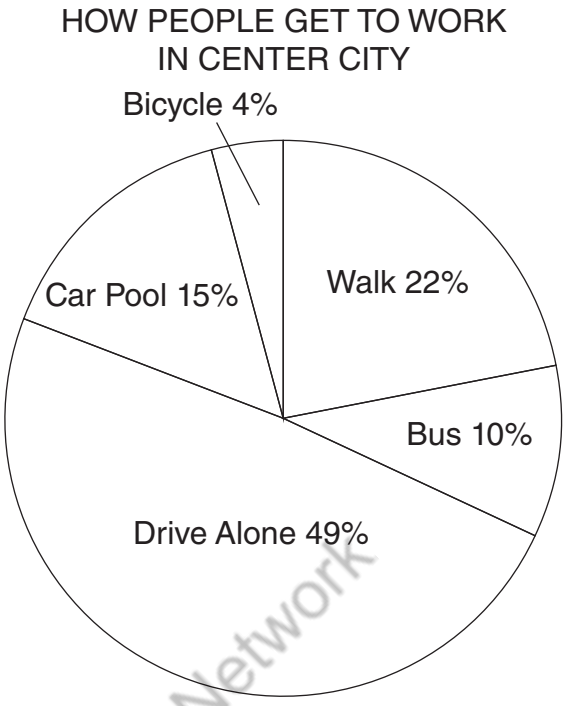
81.



How many more people in Center City walk to work than ride their bicycle to work?

A. 2,500
B. 2,700
C. 2,800
D. 3,000

82. Which of the following numbers has factors that include the smallest factor (other than 1) of 91?

E. 30
F. 35
G. 39
H. 44

83. In a scale drawing of a triangular banner, one side measures 16 centimeters and the other two sides each measure 12 centimeters. On the actual banner, these two sides each measure 36 feet. What is the length of the remaining side of the actual banner?

A. 16 ft
B. 32 ft
C. 40 ft
D. 48 ft

84. The faculty of a certain four-year college consists of 179 teachers. There are 663 first-year students. The student-to-faculty ratio for the entire college is 15 to 1. What is the total number of second-, third-, and fourth-year students?

E. 1,989
F. 2,022
G. 2,652
H. 2,685

85. $2\frac{1}{5} + 3\frac{3}{10} + 4\frac{2}{5} + 5\frac{1}{2}$

What is the value of the expression shown above?

A. $14\frac{7}{20}$

B. $14\frac{2}{5}$

C. $15\frac{7}{20}$

D. $15\frac{2}{5}$

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86. A car is traveling 55 miles per hour, and 1 mile = 5,280 feet. Which of the following calculations would give the car's speed in **feet per second**?

E. $\frac{55 \cdot 5{,}280}{1}$

F. $\frac{55 \cdot 5{,}280}{3{,}600}$

G. $\frac{55 \cdot 3{,}600}{5{,}280}$

H. $\frac{55 \cdot 5{,}280}{60}$

87. Today, Tien's age is $\frac{1}{4}$ of Jordan's age. In 2 years, Tien's age will be $\frac{1}{3}$ of Jordan's age. How old is Jordan today?

A. 4 years old
B. 6 years old
C. 12 years old
D. 16 years old

88. How many positive even factors of 48 are greater than 24 and less than 48?

E. 0
F. 1
G. 2
H. 12

89. The least of 5 consecutive integers is l, and the greatest is g. What is the value of $\frac{l+g}{2}$ in terms of l?

A. $2l$

B. $3l$

C. $l + 2$

D. $l + 5$

90. Johan leased a car for three years. He paid a one-time fee of $1,000, and an additional $300 per month for the full three years. At the end of the three years, what is the total amount Johan paid for leasing this car?

E. $1,900
F. $4,600
G. $10,800
H. $11,800

91. There are 6 different cookies on a plate. Aiden will choose 2 of these cookies to pack in his lunch. How many different pairs of 2 cookies can he choose from the 6?

A. 12
B. 15
C. 30
D. 36

92. For a presentation, Deion can create 5 slides in 20 minutes, working at a constant rate. Kyra can create 3 slides in 10 minutes, working at her own constant rate. What is the total number of slides the two of them can create in one hour?

E. 16
F. 30
G. 33
H. 55

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93.

On the number line above, $LN = \frac{1}{8}$. Point M (not shown) is located between point L and point N. Which value below is a possible value for M?

A. 4.26
B. 4.31
C. 4.35
D. 4.58

94. An unmarked straight stick will be laid end over end to measure a distance of exactly 72 feet. The same stick will be used in the same way to measure a distance of exactly 30 feet. What is the length of the longest possible stick that can be used for both measurements?

E. 3 ft
F. 4 ft
G. 6 ft
H. 8 ft

95. Ryan must read 150 pages for school this weekend. It took him 30 minutes to read the first 20 pages. At this rate, how much **additional** time will it take him to finish the reading?

A. $2\frac{1}{6}$ hr
B. $3\frac{1}{4}$ hr
C. $3\frac{3}{4}$ hr
D. $7\frac{1}{2}$ hr

96. Suppose $M = \frac{w}{x}$, $N = \frac{y}{z}$, and $w, x, y,$ and z do not equal 0. What is $\frac{M}{N}$ in terms of $w, x, y,$ and z?

E. $\frac{wx}{yz}$
F. $\frac{wy}{xz}$
G. $\frac{wz}{xy}$
H. $\frac{xy}{wz}$

97. In the set of consecutive integers from 12 to 30, inclusive, there are four integers that are multiples of both 2 and 3. How many integers in this set are multiples of **neither** 2 nor 3?

A. 5
B. 6
C. 13
D. 15

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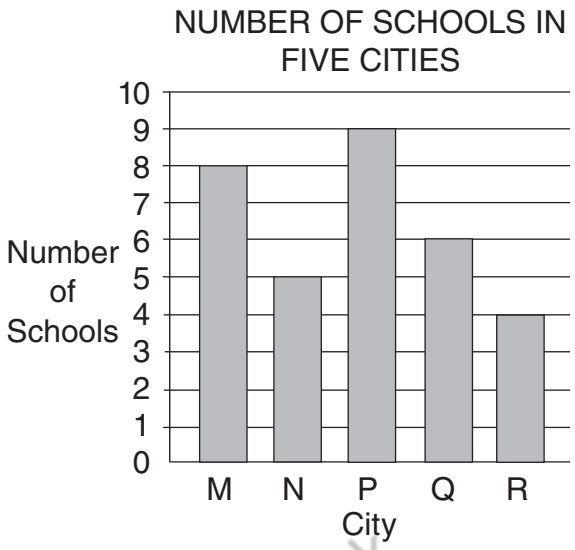
98.



The graph above shows the number of schools per city for five small cities. Cities M and N each have 500 students per school. City P has 400 students per school. Cities Q and R each have 700 students per school. Which of the five cities has the **greatest** number of students?

E. City M
F. City P
G. City Q
H. City R

99. A box contains 5 strawberry candies, 3 banana candies, and 2 orange candies. If Braden selects 2 candies at random from this box, without replacement, what is the probability that both candies are **not** banana?

A. $\frac{1}{15}$

B. $\frac{9}{100}$

C. $\frac{7}{15}$

D. $\frac{49}{100}$

100. $\frac{w}{x} = \frac{y}{z}$

In the equation above, w, x, y, and z are positive numbers. Which of these is equal to z?

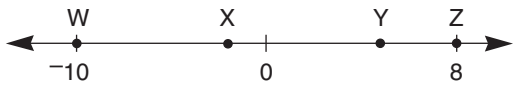
E. x

F. xy

G. $\frac{w}{xy}$

H. $\frac{xy}{w}$

101.



On the number line above, points W, X, Y, and Z are integers, and WX:XY:YZ = 4:2:3. What is the value of $\overline{WY}$?

A. 8
B. 11
C. 12
D. 18

108. A sports store has a container of handballs: 4 blue, 5 red, 8 yellow, 9 white, and 11 green. If one ball is picked from the container at random, what is the probability that it will be yellow?

E. $\frac{1}{37}$

F. $\frac{1}{8}$

G. $\frac{8}{37}$

H. $\frac{8}{29}$

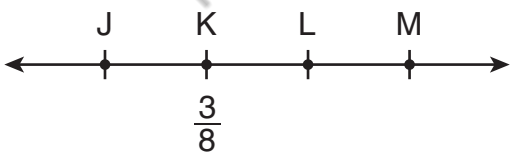
109. Each week, Leon has fixed expenses of $1,250 at his furniture shop. It costs him $150 to make a chair in his shop, and he sells each chair for $275. What is Leon's **profit** if he makes and sells 25 chairs in 1 week?

A. $1,875
B. $2,500
C. $3,125
D. $4,375

110. Using the approximation 2.54 centimeters = 1 inch, how many centimeters are in 4 feet 7 inches?

E. 21.65
F. 119.38
G. 121.92
H. 139.70

111.



On the number line above, $JK = 3\frac{1}{2}$, $JM = 9\frac{3}{4}$, and $LM = 1\frac{1}{8}$. What is the position of point L?

A. $5\frac{1}{8}$

B. $5\frac{1}{4}$

C. $5\frac{1}{2}$

D. $6\frac{1}{4}$

112. If $4x - 3y = 12$, what is x in terms of y?

E. $x = \frac{3}{4}y + 12$

F. $x = -\frac{3}{4}y + 12$

G. $x = \frac{3}{4}y + 3$

H. $x = -\frac{3}{4}y + 3$

START SHSAT PREP