

The New York City Department of Education

2023 Specialized High School 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, 2022, would be 9-21-22.

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, 2006, would be 3-1-06.

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.

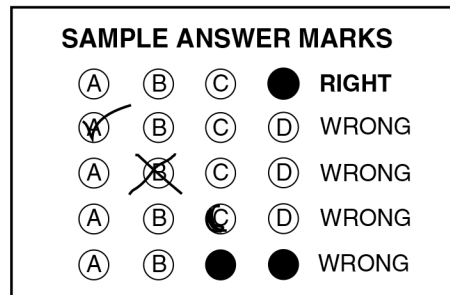
Now review Side 1 to make sure you have completed all lines and grids correctly. Review each column to see that the filled-in circles correspond to the letters or numbers in the boxes above them.

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



A

Copyright © 2022 Pearson. All rights reserved. No part of this document may be copied, reproduced, modified, or transmitted by any means, electronic or mechanical.



PART 1 — ENGLISH LANGUAGE ARTS

57 QUESTIONS

REVISING/EDITING

QUESTIONS 1-16 (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. Which revision corrects the error in sentence structure in the paragraph?

The land on Earth has not always been separated into the seven continents, at one time a massive supercontinent, known as Pangaea, covered one-third of Earth's surface. Additionally, the supercontinent was surrounded by ocean waters called Panthalassa, much of which were in Earth's Southern Hemisphere. Geologists believe that the supercontinent split apart over millions of years because of the movement of the tectonic plates that form Earth's crust. In fact, experts predict that over the next 250 million years the movement of the plates will cause the seven continents to merge into a supercontinent again.

- A. continents. At
- B. surface; additionally,
- C. Panthalassa. Much
- D. crust, in fact,

2. 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?

- E. The Appalachian Trail is an extremely long trail that millions of people do each year.
- F. The Appalachian Trail is a 2,200-mile trail that more than a million people hike each year.
- G. The Appalachian Trail is a 2,200-mile trail that two million people hike each year.
- H. The Appalachian Trail is a lengthy trail that a couple million people do each year.

3. 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.

4. Which edit should be made to correct this sentence?

In 1962 the agile athletic Wilt Chamberlain became the first and only professional basketball player in the United States to score 100 points in a single game.

- E. Insert a comma after **agile**.
- F. Insert a comma after **first**.
- G. Insert a comma after **only**.
- H. Insert a comma after **States**.

5. Which revision corrects the error in sentence structure in the paragraph?

In 1967 Katherine Switzer signed up for the Boston Marathon using her first and middle initials instead of her full name, at that time, only men were permitted to officially register and receive a number for the legendary race. Once officials realized a woman was attempting to run in the race, they made efforts to remove her from the competition. Switzer prevailed and finished in just over four hours, paving the way for the official rule change that allowed for the inclusion of women. In 2017, to mark the fiftieth anniversary of this pioneering event, a seventy-year-old Switzer repeated her run, wearing the number 261, the same number she had worn in that first run in 1967.

- A. name. At
- B. race. They
- C. hours. Paving
- D. 261. The

CONTINUE TO THE NEXT PAGE ►

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.

Cracking the Code

(1) Computer code is part of every electronic interaction, from video games to home thermostats to vehicle GPS systems. (2) Code is a language that computers can interpret, and programmers use it to instruct computers to perform different tasks, such as finding, sorting, or calculating data.

(3) People who code have to learn this language. (4) They can construct programs that will perform detailed tasks. (5) The programs can also perform complex tasks.

(6) A coding language uses letters, numbers, and symbols that are arranged in a way that makes sense to a computer. (7) The code that makes up a program tells a computer how to process information. (8) Studying a coding language involves learning the rules for combining phrases and instructions so that they are recognizable to the computer. (9) Once a person understands coding rules, the possibilities for applying them are infinite.

(10) Coding skills are becoming important in many occupational fields. (11) For example, code can be used to create programs to track, analyze, and predict changes in the stock market. (12) Code can also be designed to help doctors track and monitor a patient’s health. (13) Jobs that require coding skills are typically higher paying, offering salaries that are up to as much as \$22,000 a year more than jobs that do not require coding knowledge.

(14) People have a variety of opportunities to learn how to code. (15) In some schools, young people can study computer science and coding just as they study foreign languages. (16) Computer science teachers can use websites and apps that employ games designed to help everyone understand how code works. (17) Even high school students who do not take computer science can learn coding by attending coding workshops and online classes or by watching tutorials online.

(18) After studying the basics of coding, some students may become interested in learning how to create programs, such as games and apps.

(19) The late Steve Jobs, a pioneer in computer technology, once said, “Everybody in this country should learn how to program a computer . . . because it teaches you how to think.” (20) Learning to code can seem challenging, but one does not need to become an expert programmer to reap the benefits of understanding this language.

6. What is the **best** way to combine sentences 3 through 5 to clarify the relationship between ideas?
- E. People who code have to learn this language because they can construct programs that will perform detailed and complex tasks.
 - F. People who code have to learn this language so they can construct programs that will perform detailed or complex tasks.
 - G. When people who code have to learn this language, it is so they can construct programs that will perform detailed and complex tasks.
 - H. If people who code have to learn this language, then they can construct programs that will perform detailed as well as complex tasks.
7. Which sentence should follow sentence 5 to **best** state the main claim in the passage?
- A. People should take advantage of opportunities to study and learn basic coding because of its many valuable benefits.
 - B. People should attempt to understand how code can be used to design programs that are beneficial for a variety of industries and businesses.
 - C. Schools should offer coding classes because knowing how to code will help students succeed in many types of businesses.
 - D. Students should prepare for the future job market by studying code and learning how to code programs.
8. Which revision of sentence 10 provides the **best** transition to the argument in the third paragraph (sentences 10–13)?
- E. Learning a coding language may be difficult, but coding skills are becoming important in many occupational fields.
 - F. Learning a coding language is useful because coding skills are becoming important in many occupational fields.
 - G. Employers in most industries realize that people with coding skills can demand higher salaries in many occupational fields.
 - H. Even though programming is its own unique field, coding skills are becoming important in many occupational fields.

9. Which sentence would **best** follow sentence 13 and support the ideas in the third paragraph (sentences 10–13)?
- A. Experienced programmers, software engineers, and system administrators at large companies can earn well over \$100,000 a year.
 - B. Hospitals, physicians’ offices, and pharmaceutical companies are frequently looking to hire people who code to help with a variety of tasks.
 - C. Many companies are eager to hire employees who have experience in a specific industry as well as knowledge of basic coding.
 - D. According to a report from a job market analytics firm, almost half of today’s jobs paying more than \$58,000 a year call for some level of coding ability.
10. Which concluding sentence would **best** follow sentence 20 and support the argument presented in the passage?
- E. People should understand that knowing how to code is becoming an essential requirement for most high-paying jobs.
 - F. By understanding basic coding concepts, people can participate in an increasingly digital job market.
 - G. Students who want to secure a high-paying job in the technology industry should become proficient in coding.
 - H. Since coding is a valuable marketplace skill, today’s students should begin to write their own computer programs.

CONTINUE TO THE NEXT PAGE ►

Martial Arts for the Mind and Body

(1) The martial arts blend a series of physical movements with strategic mental discipline so that practitioners can defend themselves, physically defeat an opponent, or both. (2) Historians are unsure of exactly when and where martial arts were first used. (3) Martial arts have been practiced by several different societies for many centuries. (4) Martial arts such as karate, kung fu, tae kwon do, and judo are still taught and practiced as methods of self-defense, but they offer students more than that. (5) The study of martial arts can provide students with a way to enhance their mental discipline as well as their physical fitness.

(6) Discipline, focus, and respect are important qualities for everyone to have. (7) However, for most people these qualities are not innate; they must be learned and practiced. (8) The study of martial arts can provide an opportunity to develop these skills. (9) Students are rewarded for their dedication by passing tests and advancing to higher ranks or levels. (10) For example, in a typical tae kwon do class, students learn discipline by diligently practicing moves, improve focus by listening carefully, and demonstrate respect by bowing to the instructor and following directions.

(11) For teenagers, martial arts classes provide a safe and structured environment for gaining physical skills, building confidence, and enjoying a sense of community. (12) A lot of teens go through hard situations as they try to do well in school and in life. (13) A martial arts class can provide teens with a physical outlet for stress while also challenging them mentally.

(14) Participating in a martial arts program also helps children and teens focus on self-improvement rather than on competition. (15) Progressing through levels of achievement involves mastering more physically demanding techniques. (16) It requires students to take responsibility and be accountable for achieving set goals. (17) Students gain confidence and experience companionship with other students who are progressing through the ranks.

(18) Adults who practice martial arts can experience many of the same benefits that younger people do, but perhaps the greatest of these is health and fitness. (19) Adult martial arts students often see changes in their body within weeks of beginning a program.

(20) For people interested in studying a martial art, there are many ways to learn and practice.

(21) In addition to private studios, community recreation centers often offer low-cost or free martial arts classes. (22) There are even online videos that introduce students to the basic concepts.

(23) People should study martial arts.

11. What is the **best** way to combine sentences 2 and 3?

- A.** Historians, who are unsure of exactly when and where martial arts were first used, know that martial arts have been practiced by several different societies for many centuries.
- B.** While historians are unsure of exactly when and where martial arts were first used, they do know that martial arts have been practiced by several different societies for many centuries.
- C.** Because historians know that martial arts have been practiced by several different societies for many centuries, they are unsure of exactly when and where martial arts were first used.
- D.** Martial arts have been practiced by several different societies for many centuries, and historians are unsure of exactly when and where martial arts were first used.

- 12.** Where should sentence 10 be moved to improve the organization of the second paragraph (sentences 6–10)?
- E.** to the beginning of the paragraph (before sentence 6)
 - F.** between sentences 6 and 7
 - G.** between sentences 7 and 8
 - H.** between sentences 8 and 9
- 13.** Which revision of sentence 12 **best** maintains the formal style established in the passage?
- A.** A lot of teens have to put up with difficult things while trying to do well in school and in life.
 - B.** Many teenagers deal with tough situations as they try to stay on top of their studies and do well in life.
 - C.** Many teenagers encounter challenges as they work to succeed both academically and personally.
 - D.** A lot of teens face problems as they work to keep up with their schoolwork and find personal success.
- 14.** Which transitional phrase should be added to the beginning of sentence 17?
- E.** Over time,
 - F.** In fact,
 - G.** Even so,
 - H.** For instance,

- 15.** Which sentence would **best** follow and support sentence 18?
- A.** Adult students gain discipline, focus, self-control, and respect, which are qualities that help them advance in their careers.
 - B.** Many adults initially train in a martial art simply to get exercise without realizing that the training also helps develop other skills.
 - C.** The exercise involved in training helps people strengthen their heart, boost endurance, improve balance, and develop muscle tone.
 - D.** People who commit to training in the martial arts are usually concerned about improving their overall physical health.
- 16.** Which concluding sentence should replace sentence 23 to **best** support the topic presented in the passage?
- E.** With so many ways to begin studying martial arts, people can easily discover how the skills needed to progress in rank may help them in life.
 - F.** By taking advantage of opportunities to practice martial arts, people can experience the satisfaction of achieving goals while also improving themselves.
 - G.** Because people are eager to reap the mental and physical benefits of studying martial arts, enrollment in martial arts courses has increased.
 - H.** While taking martial arts classes can improve health for both young people and adults, the effects are clearly more immediate for adults.

READING COMPREHENSION

QUESTIONS 17–57

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 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.

CONTINUE TO THE NEXT PAGE ►

Excerpt from “Scribe Like an Egyptian”

by Hilary Wilson

- 1 In ancient Egypt, literacy was the key to success. However, contrary to popular belief, not all Egyptian scribes understood hieroglyphs. Many relied instead on the simpler hieratic script for the multitude of everyday documents generated by the Egyptian bureaucracy.¹
- 2 Hieroglyphs—“the Words of God”—compose a writing system with more than 1,000 distinct characters, the meanings of which were lost for 1,500 years before they were deciphered by Jean-François Champollion in 1822. Including both ideograms (which convey a whole word or idea, either concrete or abstract, in a single sign) and phonograms (representing either an alphabetic sound or a group of consonants), [the writing system] was used in formal inscriptions on tomb and temple walls as well as on elaborate funerary papyri.² For everyday purposes, however, scribes used a shorthand version of the hieroglyphic script known as hieratic, which was quicker to write and more economical of space. The two writings existed side by side for at least 2,500 years.
- 3 Scraps of ancient hieratic writing, mostly penned by student scribes on limestone flakes called ostraca, suggest that no matter how humble his origins, an educated Egyptian could achieve almost anything. Horemheb (d.1292 B.C.) is a good example. Born of middle-ranking parents, his scribal training led to an army career. From Scribe of Recruits, during the reign of Akhenaten (1353–1336 B.C.), Horemheb rose through the military ranks and, by the rule of Tutankhamun (1332–1323 B.C.), he was commander in chief of the Egyptian forces. As a close adviser of the young Pharaoh, Horemheb was appointed “Deputy of the King throughout the Two Lands,” and might have expected to succeed to the throne should the king die childless. He had to wait a few years, but eventually Horemheb achieved the pinnacle of his career by becoming the last king of the 18th Dynasty, making his mark by instituting dramatic reforms to the organization of the army, the judiciary and administration in general. The lasting success of these changes owed much to his scribal background. . . .
- 4 But education was not available to all. Government departments and major temples supported schools, where boys commenced their training at six or seven, sometimes earlier. To these boarding establishments . . . family or household servants delivered the students’ food and drink rations daily for several years, during which time the student was not contributing to the family’s income. Boys from poorer families could only hope to be educated with support from a wealthier relative or patron, or through apprenticeship to an older scribe, perhaps the local clerk or land agent, who would teach them the basics of the scribe’s craft. This limited the scope for employment but such “on the job” training allowed apprentices to help out at home while learning. . . .
- 5 Scribal education began with the elementary principles of the hieratic script. The lowliest scribes, who trained for just five or six years, probably learned only the rudiments³ of the hieroglyphic

¹**bureaucracy:** an administrative staff of government officials

²**funerary papyri:** a sheet or scroll of papyrus containing religious images and hieroglyphs meant to help the deceased be reborn in the afterlife

³**rudiments:** basics

script. Students were set exemplar documents and extracts from popular texts to copy, to practice their hieratic handwriting on basic-format letters, reports and contracts, while absorbing the good advice contained in the texts. Surviving examples of copy-work sometimes include tutors' corrections added in red. Some significant Egyptian literary works survive almost exclusively from student copies.

6 A schoolboy⁴ "dictionary" of hieroglyphs with their hieratic equivalents shows that a knowledge of more than 450 signs was required for everyday writing purposes. Lessons in record-keeping and filing and labelling enabled any half-competent scribe to perform that most essential of all scribal functions: the making and updating of lists. For professions such as those of government official, priest or lawyer, a scribe would train for several more years, increasing his vocabulary to perhaps a thousand or more signs. Those with the best handwriting or drawing skills might follow the craft of creating beautifully illustrated copies of funerary texts, commonly called *Books of the Dead*. Others could become draughtsmen⁵, artists or architects. Doctors compiled their own collections of medication recipes, treatments and associated incantations, many copied from texts found in the House of Life, the temple library. Lawyers had to be familiar with the corpus⁶ of civil and religious laws and precedents found in the official records, which were administered by archivists. Egypt's bureaucratic society depended on the skills of an army of scribes of all ranks from filing clerk to tax assessor. For young Egyptians, "be a scribe" was the best of career advice.

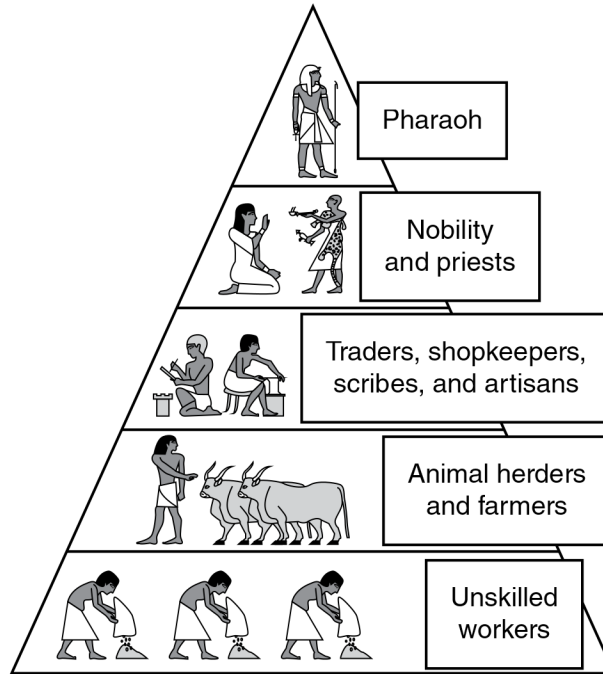
From "Scribe Like an Egyptian" by Hilary Wilson from HISTORY TODAY, August 8, 2019. Copyright © 2019 by History Today Ltd. Company.

⁴**schoolboy:** slang that refers to materials used during the course of receiving an education

⁵**draughtsmen:** a person who draws plans of machinery or structures

⁶**corpus:** a collection of writings

ANCIENT EGYPTIAN
SOCIAL CLASS STRUCTURE



17. Which sentence from the excerpt **best** supports the idea that there were different levels of education for a scribe?
- A. "However, contrary to popular belief, not all Egyptian scribes understood hieroglyphs." (paragraph 1)
 - B. "For everyday purposes, however, scribes used a shorthand version of the hieroglyphic script known as hieratic, which was quicker to write and more economical of space." (paragraph 2)
 - C. "This limited the scope for employment but such 'on the job' training allowed apprentices to help out at home while learning." (paragraph 4)
 - D. "For professions such as those of government official, priest or lawyer, a scribe would train for several more years, increasing his vocabulary to perhaps a thousand or more signs." (paragraph 6)

18. Read this sentence from paragraph 2.

Including both ideograms (which convey a whole word or idea, either concrete or abstract, in a single sign) and phonograms (representing either an alphabetic sound or a group of consonants), [the writing system] was used in formal inscriptions on tomb and temple walls as well as on elaborate funerary papyri.

The author's purpose for including the sentence is to

- E. explain that hieroglyphs were reserved for royal and religious purposes.
- F. demonstrate the methods experts use to interpret hieroglyphs.
- G. clarify the significance of hieroglyphs in language and literature.
- H. describe the basic features of hieroglyphs and how they were typically used.

19. Which statement summarizes the process that schools used to train scribes?

- A. Boys had to memorize around 450 hieratic signs. Once they had learned these, they were expected to copy literary texts that contained valuable lessons.
- B. Boys spent at least five years learning hieratic signs, which they practiced by copying texts. During this period, they were also introduced to basic hieroglyphs.
- C. Boys spent five or six years learning the basics of hieratic script. After this period, they could become apprentices and begin learning hieroglyphics.
- D. Boys were taught two different scripts. They practiced both types by copying lists and eventually progressed to writing letters, reports, and contracts.

20. Which claim is **best** supported by the information presented in paragraphs 3 and 4?

- E. Education was difficult for the common citizens of Egypt to obtain.
- F. Once students began studying to become scribes, their future held more possibilities.
- G. If someone wanted to become a scribe, support from outside sources such as the government or a temple was necessary.
- H. Becoming a successful scribe required a student's family to sacrifice time and money in order to ensure the best education.

21. Hieratic script was particularly valuable in a bureaucratic government because
- A. using hieratic script was an efficient way for scribes to produce large amounts of documentation.
 - B. many members of the general public could comprehend information that was written in hieratic script.
 - C. knowledge of hieratic script prepared scribes to serve their society in increasingly challenging roles.
 - D. people from different professional backgrounds could easily communicate with one another in hieratic script.
22. The diagram after paragraph 6 **best** provides additional support for the topic of the excerpt by
- E. demonstrating the place of scribes in ancient Egyptian social structure.
 - F. depicting the types of tasks performed by each social class.
 - G. indicating that scribes were able to easily improve their social ranking.
 - H. comparing the social positions of each social class in ancient Egypt.
23. Based on the excerpt, which statement would the author **most** strongly agree with?
- A. Boys in Egypt were encouraged to enter the same profession as older male relatives.
 - B. Knowledge of hieroglyphs was helpful to Egyptians who were interested in becoming scribes.
 - C. Hieratic script was more practical to ancient Egyptians than hieroglyphs were.
 - D. Boys in Egypt who studied for only a few years were unlikely to find employment as scribes.

CONTINUE TO THE NEXT PAGE ►

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 camas¹ 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.

¹**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.

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

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

Excerpt from “The Food Business Incubator”

by Mandalit Del Barco

- 1 “La Cocina” means “the kitchen” in Spanish. It’s also the name of a business incubator¹ based in San Francisco’s Mission District. Since it began in 2005, it’s been helping local food entrepreneurs, many of whom are low-income immigrant women, develop their small businesses.
- 2 Over the years, many of its alumni have found success: more than 50 chefs in its program have become self-sufficient business owners, and many of them have opened their own brick-and-mortar restaurants. Two alumnae of its culinary program . . . were even recognized as semi-finalists for prestigious James Beard awards.²
- 3 A new cookbook, *We Are La Cocina: Recipes in Pursuit of the American Dream*, tells some of their stories.
- 4 Executive director Caleb Zigas says the nonprofit La Cocina grew out of two grassroots economic development organizations³ who found many people cooking at their homes and selling food on the streets. The vendors needed an affordable commercial kitchen space and technical assistance in order for their businesses to be legally viable. La Cocina provided just such a space, in addition to helping them develop business plans, pull city permits and more.
- 5 Zigas says as many as eight businesses can work in the kitchen space at La Cocina at any one time. Some can prep for a farmers’ market sale, corporate catering gigs or weddings, while others might be making and packaging their food products.
- 6 “It’s just an incredible and exciting range of techniques, flavors, perspectives, age, language. And that’s a really beautiful thing,” he says. . . .
- 7 Twice a year, La Cocina hosts “F&B: Voices from the Kitchen,” a storytelling project where their chefs can tell their own stories, as they do in the new cookbook. Some of the chefs will be on tour to promote the book, whose proceeds will go to support La Cocina entrepreneurs.
- 8 NPR⁴ caught up with . . . La Cocina chefs, who shared their stories:

Mariko Grady, Aedan Fermented Foods

- 9 At La Cocina, you can often hear Mariko Grady singing or humming as she prepares miso, *koji*, and *amasake*. Her fermented products come in four different flavors, including mushroom and chicken, to be used in soups and sauces. She originally brought the fermenting rice and barley

¹**business incubator:** company that helps new and startup companies develop by providing services such as management training and office space

²**James Beard awards:** an award named after American cook and author James Beard, considered one of the highest honors in the culinary industry

³**economic development organizations:** organizations whose mission is to promote economic improvement within a specific geographical area

⁴**NPR:** National Public Radio, a nonprofit media organization that produces and distributes news and cultural programming

koji seeds from Japan, where she had a 30-year career as a singer and dancer with the prestigious modern theatrical dance group she founded, Pappa Tarahumara. They performed around the world, and 16 years ago, had a one-night show in San Francisco. The man who would become her husband was in the audience. She soon joined him in San Francisco, often returning to Tokyo to rehearse. But after the earthquake and tsunami hit Japan in 2011, her company disbanded. . . . Grady focused on nourishing her family and creating a line of fermented products that she sells online, at local Bay Area stores and at the Ferry Plaza Farmers Market. She began at La Cocina in 2012 and named her business after her son, Aedan. (Written in Kanji characters, the name means “wisdom” and “handed down from generation to generation.”) . . . Her fermented products are “also full of wisdom about how to relate to nature and how to create a healthy life,” she says. . . .

Shani Jones, Peaches Patties

- 10 Shani Jones is a native San Franciscan. Her father was born in New Orleans, her mother, in Jamaica. She says their home was always filled with a variety of spices and dishes like jerk chicken and Jamaican patties—savory pastries filled with beef or chicken. Jones says she learned to cook from her mother, whose nickname was Peaches. After returning from college in Atlanta, Jones worked on her doctorate in organizational leadership and management while driving a Lyft⁵ car. She often told passengers about her idea of opening a catering company with her mom’s recipes. They steered her to La Cocina, where she developed her own business, named after her mother. Five years later, she caters and runs a kiosk⁶ at a small food cooperative in Bernal Heights, where some of her handmade patties have an Ethiopian twist, “because my husband is Ethiopian.” Jones has big aspirations for Peaches Patties: “The ultimate goal,” she says, “is to be the patty kingpin⁷ of the West Coast.”

From “The Food Business Incubator That Helps Immigrant Women Pursue The American Dream” by Mandalit Del Barco from WEEKEND EDITION SUNDAY, June 19, 2019. Copyright © 2019 NPR.

⁵**Lyft:** ride-sharing company where people use their own cars to provide rides to customers

⁶**kiosk:** cart or small structure with one or more open sides that is used to vend merchandise or services

⁷**kingpin:** the leader in a group or undertaking

QUALIFICATIONS FOR LA COCINA APPLICANTS

Level of Income	La Cocina considers assets and access to opportunity when screening applicants. La Cocina’s mission is to support entrepreneurs who face barriers to becoming successful in the food industry. Applicants must be classified as low- or very-low-income earners according to the Housing and Urban Development (HUD) Guidelines for San Francisco.
Business Plan	Applicants must have a business plan that is ready to be put into action. La Cocina will help applicants refine an existing business plan. Applicants without a business plan should contact one of La Cocina’s partner organizations for guidance in developing one.
Viable Product	The applicant’s food must not only be delicious but also stand out. For a business to make a profit, there also has to be a market for the food.
Entrepreneurial Work Ethic	La Cocina is excited to work with entrepreneurs who are motivated and passionate about growing their business. Succeeding in the food industry requires a lot of heart and hard work.
Community Spirit	The 30+ entrepreneurs who share La Cocina’s kitchen are from many different backgrounds. La Cocina values the community it has created and expects each entrepreneur to be active in bringing the spirit of La Cocina to the wider world. In order to succeed in the La Cocina kitchen, accepted applicants must be flexible and willing to work closely with others.

Source: La Cocina

31. Read this sentence from paragraph 2.

Two alumnae of its culinary program . . . were even recognized as semi-finalists for prestigious James Beard awards.

The words “recognized” and “prestigious” in the sentence convey that La Cocina

- A.** makes an effort to identify chefs who have a strong entrepreneurial work ethic.
- B.** has the ability to mentor chefs to reach the highest levels of achievement in their craft.
- C.** is focused on establishing local food entrepreneurs as celebrated professionals in their industry.
- D.** is dedicated to assisting chefs in developing new and innovative products.

- 32.** Paragraph 4 contributes to the development of ideas about La Cocina in paragraph 1 by
- E.** specifying how La Cocina helps local food entrepreneurs become successful.
 - F.** explaining what kind of goals La Cocina tries to set for local food entrepreneurs.
 - G.** providing background information about local food entrepreneurs in San Francisco.
 - H.** describing how Caleb Zigas discovered the need to provide assistance to local food entrepreneurs.
- 33.** The description of Mariko Grady’s background in paragraph 9 contributes to a central idea in the excerpt by
- A.** demonstrating what people are looking for when they come to La Cocina.
 - B.** explaining why La Cocina is the best option for people starting out in the food business.
 - C.** showing how La Cocina can help people find success in the food business even though they have a background in something different.
 - D.** confirming that La Cocina was originally established for small business owners who are looking to expand their services.
- 34.** Which statement would the author **most likely** agree with?
- E.** The publicity efforts La Cocina engages in will help its business design spread to other cities.
 - F.** The variety of exciting food available in San Francisco is due to the work of La Cocina.
 - G.** La Cocina offers a method that will guarantee business ownership for qualified entrepreneurs.
 - H.** La Cocina does admirable work in supporting the efforts of ambitious cooks who may have few resources.

- 35.** Which detail would be **most** important to include in a summary of the excerpt?
- A.** La Cocina produced a cookbook that includes some members' stories.
 - B.** La Cocina provides legal and technical assistance to its members.
 - C.** Potential vendors need a market for their food before considering La Cocina.
 - D.** There are different types of venues that food vendors from La Cocina use.
- 36.** The table provides additional support for a central idea of the excerpt by
- E.** showing how La Cocina works with partner organizations to further educate and advance successful applicants within the food industry.
 - F.** explaining how applicants are prepared to develop their own businesses once they leave La Cocina.
 - G.** establishing that La Cocina is dedicated to its mission to provide delicious food to different communities.
 - H.** emphasizing that applicants must be willing to dedicate time to promoting and developing their business with La Cocina.

CONTINUE TO THE NEXT PAGE ►

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 spatial¹ 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

¹**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 anomaly² visible. . . .

- 6 As the millennia go by, bristlecones become contorted and wraithlike.³ 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 spate⁴ 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.

²**anomaly:** oddity

³**wraithlike:** ghostly

⁴**spate:** sudden abundance

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

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

39. 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

- A. emphasizing the bristlecone pine’s precise growth pattern.
 - B. suggesting that things that seem well established face threats.
 - C. describing the pace of the life cycle of the bristlecone pine.
 - D. explaining the reason for the bristlecone pine’s longevity.
40. 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.
41. 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.

42. Throughout the excerpt, the author conveys his point of view mainly by
- E. sharing details about the qualities of the bristlecone pine that make it an unusual tree.
 - F. comparing the bristlecone pine to global empires that lasted thousands of years before falling.
 - G. explaining the way the seemingly sickly appearance of the bristlecone pine contrasts with its ability to survive.
 - H. arguing that the bristlecone pine has survived past threats to its survival and will continue to thrive.
43. What is the **best** summary of the bristlecone pine’s life cycle?
- A. 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.
 - B. 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.
 - C. 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.
 - D. 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.

Bird Talk

by Carl Sandburg

And now when the branches were beginning to be heavy,
It was the time when they once had said, "This is the
beginning of summer."

The shrilling of the frogs was not so shrill as in the
5 first weeks after the broken winter;
The birds took their hops and zigzags a little more
anxious; a home is a home; worms are worms.
The yellow spreads of the dandelions and buttercups
reached across the green pastures.
10 *Tee whee* and *tee whee* came on the breezes, and the grackles
chuzzled their syllables.

And it was the leaves with a strong soft wind over them
that talked most of all and said more than any others
though speaking the fewest words.

15 It was the green leaves trickling out the gaunt nowhere
of winter, out on the gray hungry branches—
It was the leaves on the branches, beginning to be heavy,
who said as they said one time before, "This is the be-
ginning of summer."

20 We shall never blame the birds who come
where the river and the road make the Grand Crossing
and talk there, sitting in circles talking bird talk.

If they ask in their circles as to who is here
and as to who is not here and who used to be here,

25 Or if instead of counting up last year as against
this year, they count up this year as against next
year, and have their bird chatter about who is here
this year who won't be here next year,
We shall never blame the birds.

30 If I have put your face among leaf faces, child,
Or if I have put your voice among bird voices,
Blame me no more than the bluejays.

"Bird Talk" from THE COMPLETE POEMS OF CARL SANDBURG, published by Harcourt Brace & Company.
Copyright © 1970, 1969 by Lilian Steichen Sandburg, Trustee.

44. Read lines 6–7 from the poem.

**The birds took their hops and zigzags a little more
anxious; a home is a home; worms are worms.**

What idea from the second stanza do the lines help develop?

- E. The birds are eager for the return of warmer months.
 - F. The birds are most likely to thrive during the spring.
 - G. The birds naturally adjust to the seasonal changes.
 - H. The birds instinctively prepare for the future.
45. Read lines 12–14 from the poem.

**And it was the leaves with a strong soft wind over them
that talked most of all and said more than any others
though speaking the fewest words.**

What does the phrase “talked most of all” in line 13 convey?

- A. It establishes that the speaker thinks the sound of wind in the leaves is the best indication that the season is changing.
 - B. It introduces the idea that the sound of the wind in the leaves remains constant throughout the seasons.
 - C. It suggests that the speaker is overwhelmed by the sounds of nature that emerge as the season changes.
 - D. It emphasizes that the sounds of nature enable the speaker to appreciate each season of the year.
46. How does the repetition of “ ‘This is the beginning of summer’ ” in lines 2–3 and lines 18–19 contribute to the meaning of the poem?
- E. It suggests that the shift to summer occurs in the same way each year.
 - F. It emphasizes the idea that living things are prepared for the change of season.
 - G. It highlights the idea that the first signs of summer are surprising each year.
 - H. It builds expectations about what the natural world looks like during a change of season.

47. Which lines from the poem **best** contrast with the idea of winter’s scarcity and bleakness?
- A. “The shrilling of the frogs was not so shrill as in the / first weeks after the broken winter;” (lines 4–5)
 - B. “The yellow spreads of the dandelions and buttercups / reached across the green pastures.” (lines 8–9)
 - C. “*Tee whee* and *tee whee* came on the breezes, and the grackles / chuzzled their syllables.” (lines 10–11)
 - D. “Or if instead of counting up last year as against / this year, they count up this year as against next” (lines 25–26)
48. How do lines 23–28 contribute to a central idea of the poem?
- E. They suggest that the speaker is aware of what has been lost in the winter.
 - F. They imply that the birds sing the most in the summer.
 - G. They reveal that the birds are subject to the cycles of nature.
 - H. They emphasize that the speaker enjoys observing nature.
49. Throughout the poem, the poet conveys the speaker’s point of view by
- A. gradually moving the speaker’s attention from one element of nature to another.
 - B. providing the speaker’s motivation for describing the landscape in great detail.
 - C. highlighting the speaker’s emotional response as each season passes.
 - D. shifting the speaker’s focus from external observations to personal reflection.
50. Over the course of the poem, a central idea is developed mainly through the speaker’s
- E. sense of eager anticipation as winter ends.
 - F. description of the changes in nature as the seasons transition.
 - G. observation of the birds’ behavior as summer begins.
 - H. prediction of future alterations in the physical landscape.

CONTINUE TO THE NEXT PAGE ►

The author of this opinion article attended a symposium, or conference, in Missoula, Montana, at which biologists and other scientists discussed species of plants and animals that are not native to the areas in which they live.

Excerpt from “It’s Time to Stop Thinking That All Non-Native Species Are Evil”

by Emma Marris

- 1 Invasive species are scary. It was ecologist Charles Elton, back in the 1950s, who introduced the militaristic “invasion” metaphor to describe exotic plants and animals—but there’s no question some can be extremely destructive.
- 2 The brown tree snake has eaten a dozen kinds of forest birds in Guam to extinction; zebra mussels clog pipes around the Great Lakes; the common house cat turns out to be, in Australia, a mercilessly effective killer of cute, fluffy marsupials like the bilby and the numbat.
- 3 As scientists have sounded the alarm about these pests, the public has gotten the message. Citizen groups rip out non-native plants. Native gardens have become increasingly popular, both as ways to celebrate the unique flora of each region and as tiny hot spots of diversity. Native trees provide food for native bugs, which feed native birds. Food chains developed over thousands of years of co-evolution unfold in our backyards. . . .
- 4 So we’ve learned, scientists and laypeople alike, that native species are good and non-natives are bad.
- 5 Julian Olden, a biologist at the University of Washington, Seattle, who co-organized the symposium, recently polled nearly 2,000 ecologists. Among his findings: a substantial number of them said they would immediately eradicate a hypothetical non-native forest plant, even if it were shown to have no effect on the forest. Olden calls this the “guilty even when proven innocent” approach.
- 6 That kind of approach is not very useful on a rapidly changing planet.

Exotics Are Everywhere

- 7 Climate change is making it harder even to decide who the invaders are.
- 8 How, scientists at the symposium wondered, do you define “native” on a warming planet, when plants and animals are already moving toward the poles or up mountainsides in search of climate conditions they can tolerate? Should we consider them “invasive” in their new homes? Regardless of what we label them, conservationists will be reluctant to remove them from their new environs—to do so would stymie¹ their chances of adapting to the warmer future we’re creating.
- 9 And then there are the non-natives that we actually like. Most domestic crops are exotic in most of the places they’re grown, but there are even wild exotics that “do good,” forming useful relationships with native species.

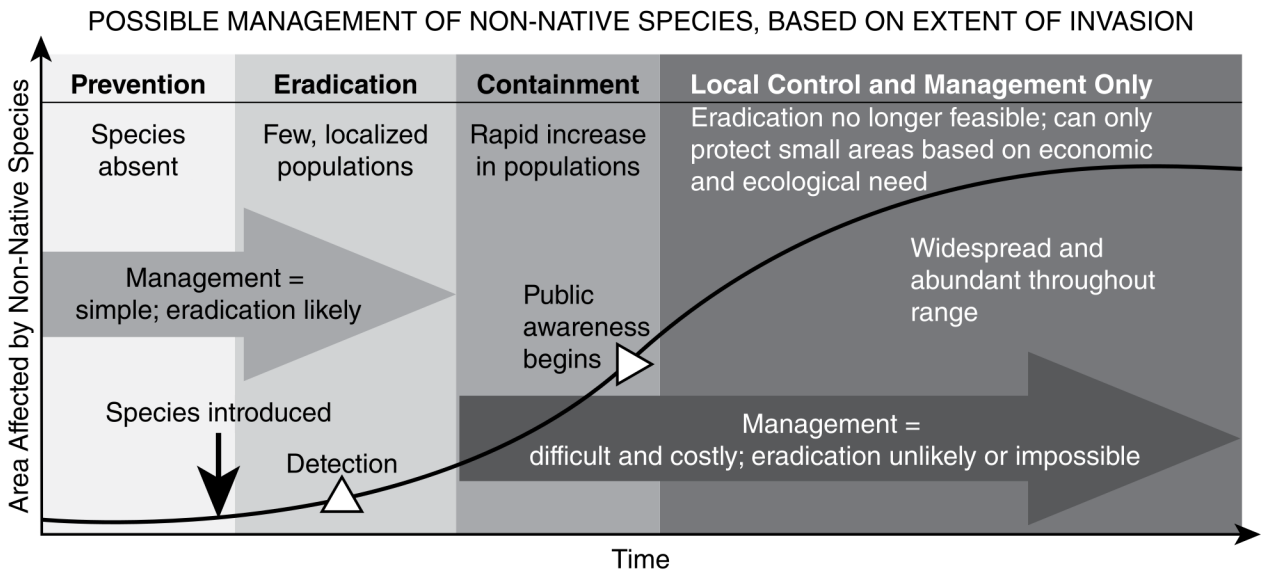
¹**stymie:** hinder or interfere with

- 10 Edwin Grosholz of the University of California, Davis, told the recent symposium about one such relationship. On beaches in his state, non-native spartina grass has become important habitat for the endangered California clapper rail, a plump shorebird with a downward curving bill more at home on land than in the air. A project to rip out and poison the spartina—which grows in dense swaths that exclude many other shorebirds—saw clapper rail numbers go tumbling downward.
- 11 There are other examples like that. The endangered southwestern willow flycatcher nests in “invasive” tamarisk shrubs. Many native (and beautiful) Hawaiian flowers are now pollinated by the Japanese white-eye bird—because the native pollinators have been driven extinct by other non-native species.
- 12 Should we impose further risk on already endangered natives by severing these relationships? Or should we admire the resilience of nature and let such “well-behaved” exotics stay? . . .
- 13 Leave them alone, more and more conservationists are arguing, and stop focusing obsessively on categorizing species as native or non-native. Mark Davis, an ecologist at Macalester College in St. Paul, Minnesota, once considered himself an “invasion biologist”—but not anymore. “I am actively trying to get the field to retire the invader narrative,” he said in Missoula.

A Good Thing, Not the Only Thing

- 14 After all, nativeness is just one environmental value, and arguably not as important as preventing extinctions and preserving biodiversity. In some cases we can best serve biodiversity by leaving the non-natives alone or even—brace yourself, now—introducing them on purpose.
- 15 This is the thinking behind, for example, installing the Aldabra tortoise on the islands of Mauritius. The islands lost their own large tortoises, and the fruiting plants that formerly had their seeds moved around by these fruit-loving reptiles have been on the decline. A tortoise that’s related to the island’s large tortoises—a non-native from the Seychelles in the Indian Ocean that was intentionally introduced in 2004—is now handling some of that work.
- 16 Most of the time, for the time being, conserving species still means focusing on supporting them in their historical habitats, planting natives and removing non-natives. We can and should do that in places where it is feasible and important to us.

From “It’s Time to Stop Thinking That All Non-Native Species Are Evil” by Emma Marris from NATIONAL GEOGRAPHIC MAGAZINE, July 24, 2014. Copyright © 2014 by National Geographic Society.



- 51.** Which sentence from the excerpt supports the conclusion that Elton’s “militaristic ‘invasion’ metaphor” (paragraph 1) has influenced scientific understanding of non-native species?
- A.** “Among [Olden’s] findings: a substantial number of them said they would immediately eradicate a hypothetical non-native forest plant, even if it were shown to have no effect on the forest.” (paragraph 5)
 - B.** “Regardless of what we label them, conservationists will be reluctant to remove them from their new environs—to do so would stymie their chances of adapting to the warmer future we’re creating.” (paragraph 8)
 - C.** “A project to rip out and poison the spartina—which grows in dense swaths that exclude many other shorebirds—saw clapper rail numbers go tumbling downward.” (paragraph 10)
 - D.** “In some cases we can best serve biodiversity by leaving the non-natives alone or even—brace yourself, now—introducing them on purpose.” (paragraph 14)
- 52.** Climate change has affected efforts to manage invasive species mainly by causing ecologists to
- E.** call upon the public to be more tolerant of the presence of non-native species.
 - F.** admit that past attempts to eliminate non-native species have damaged the environment.
 - G.** find ways of ensuring that native species are not harmed by the arrival of new species.
 - H.** acknowledge that it is not realistic for some species to remain in their native habitats.

- 53.** Which detail provides the **most** relevant support for the claim that “climate change is making it harder even to decide who the invaders are” (paragraph 7)?
- A.** the mention in paragraph 8 of non-native species that are forced to seek new habitats
 - B.** the acknowledgment in paragraph 9 that non-native species include many domestic crops
 - C.** the description in paragraph 11 of the interactions between native and non-native species
 - D.** the account in paragraph 13 of an ecologist who changed his beliefs about non-native species
- 54.** The author’s use of cause and effect in paragraphs 10–11 mainly emphasizes the idea that
- E.** some non-native species have helped their environments while others have had harmful impacts.
 - F.** attempts to remove non-native species have seldom produced desired results.
 - G.** some endangered native species have flourished because of the presence of non-native species.
 - H.** interactions between endangered native species and non-native species must be carefully monitored.
- 55.** Which sentence from the excerpt supports the idea that some species are able to adjust to change?
- A.** “Native gardens have become increasingly popular, both as ways to celebrate the unique flora of each region and as tiny hot spots of diversity.” (paragraph 3)
 - B.** “Many native (and beautiful) Hawaiian flowers are now pollinated by the Japanese white-eye bird—because the native pollinators have been driven extinct by other non-native species.” (paragraph 11)
 - C.** “After all, nativeness is just one environmental value, and arguably not as important as preventing extinctions and preserving biodiversity.” (paragraph 14)
 - D.** “The islands lost their own large tortoises, and the fruiting plants that formerly had their seeds moved around by these fruit-loving reptiles have been on the decline.” (paragraph 15)

- 56.** The details in the section “A Good Thing, Not the Only Thing” convey a central idea of the excerpt by suggesting that
- E.** some non-native species can replace native species that are unable to survive on their own.
 - F.** decisions about whether to keep non-native species should be considered on an individual basis.
 - G.** the scientists who study rapidly changing ecosystems agree that non-native species enhance biodiversity.
 - H.** a natural habitat that is healthy should be able to support a blend of native and non-native species.
- 57.** How does the chart provide additional support for a central idea of the excerpt?
- A.** by implying that the public becomes aware of non-native species only after removal is impossible
 - B.** by showing that the complete removal of non-native species is usually not achievable after a certain period of time
 - C.** by demonstrating why non-native species can be destructive if they are not removed from an area immediately
 - D.** by explaining how some conservation groups have approached the removal of non-native species

CONTINUE TO THE NEXT PAGE ►

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)

Negative sign →

-	1	.	5
<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

 ← Decimal point

(Answer: 3.2)

Negative sign →

-	3	.	2
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

 ← Decimal point

CONTINUE TO THE NEXT PAGE ►

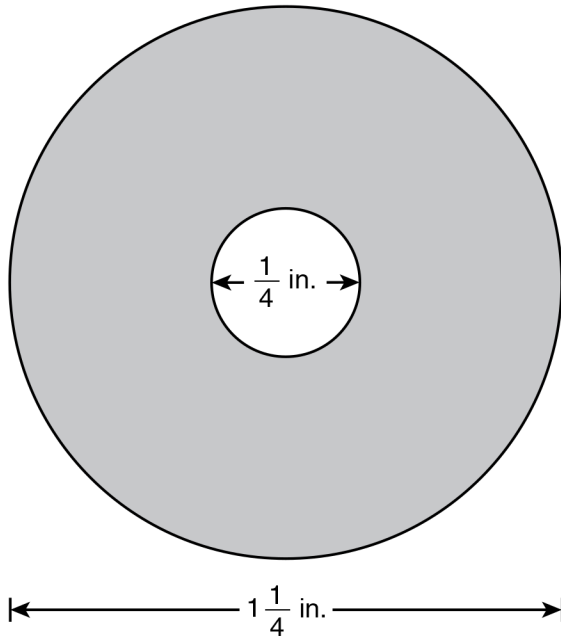
GRID-IN QUESTIONS

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. The figure below shows a circle with a hole in the middle. The outer diameter of the circle is $1\frac{1}{4}$ inches. The diameter of the hole is $\frac{1}{4}$ inch.



What is the area of the shaded region, to the nearest hundredth of a square inch?

59. A homeowner has a budget of \$135 for the installation of a light fixture. An electrician charges \$60 per hour plus a one-time trip charge of \$45. What is the **greatest** amount of time, in hours, the electrician can work on the installation while staying within the homeowner's budget? Write your answer as a decimal.

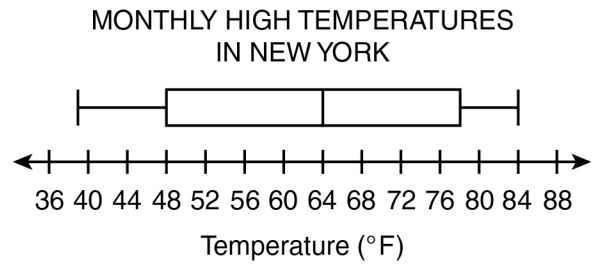
60. The list shows the daily low temperatures in a city during six days in the winter.

7° F, 4° F, 1° F, -2° F, -5° F, 3° F

What is the difference between the lowest and highest temperatures, in degrees Fahrenheit, for the six days?

61. A grocery store sells 1-gallon containers of milk for \$3.99. The store also sells orange juice in a 6-pack of 5.5-fluid-ounce bottles for \$1.79. Suppose the store wants to sell its orange juice in gallon containers instead. To the nearest dollar, how much more would a gallon of orange juice cost than a gallon of milk?

62.



The box plot shows the average monthly high temperatures in New York City for 12 months. What is the difference between the range and the interquartile range of the temperature data?

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. What is the prime factorization of 756?

- A. $2^2 \cdot 3^2 \cdot 21$
- B. $2^2 \cdot 3 \cdot 7 \cdot 9$
- C. $2^2 \cdot 7 \cdot 27$
- D. $2^2 \cdot 3^3 \cdot 7$

64.

$$\frac{x^2y^6}{xy^2}$$

What is the value of the expression above if $x = -2$ and $y = 2$?

- E. -64
- F. -32
- G. 16
- H. 32

65. If $(8 \div m) + 4 = 20$, what is the value of m ?

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

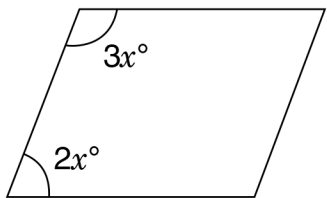
66. $6x = x - 1,680$

What is the value of x in the equation shown above?

- E. 336
- F. 240
- G. -240
- H. -336

67. A person buys a used car with a down payment of \$1,200 and makes monthly payments of \$275 for 3 years. What is the total amount the person pays for the car?
- A. \$2,025
B. \$9,900
C. \$11,100
D. \$13,500

68.



In the parallelogram above, what is the value of x ?

- E. 36
F. 18
G. 6
H. 5

69. A bus begins its trip with R occupants (including the driver). At each of the 20 stops, 3 people get on and no one leaves. If there are 3 times as many bus occupants at the end of the 20th stop as there are at the end of the 4th stop, how many occupants did the bus have immediately after the 10th stop?
- A. 12
B. 24
C. 30
D. 42

70. Jay sold n tickets. Pilar sold three times as many tickets as Jay did. Together, Jay and Pilar sold ten more tickets than Amie sold. Which expression shows how many tickets Amie sold?
- E. $10 - 4n$
F. $3n^2 + 10$
G. $4n + 10$
H. $4n - 10$

71.

$$-12 > 6x$$

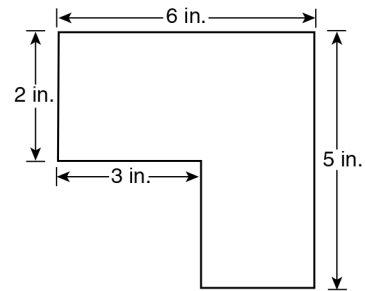
For what values of x is the above inequality true?

- A. $x > -6$
- B. $x < -6$
- C. $x < -2$
- D. $x > -2$

72. If $5(x - 6y) = 50y$, what is the value of x in terms of y ?

- E. $16y$
- F. $15y$
- G. $11\frac{2}{5}y$
- H. $11y$

73.



Scale: $\frac{1}{2}$ in. = 25 ft

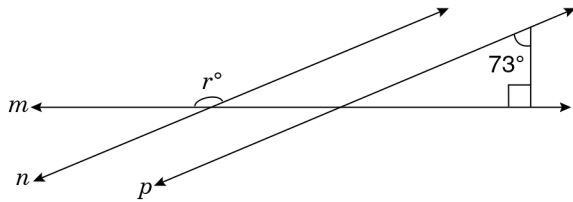
A scale drawing of a new pool is shown above. All the corners are right angles. What is the perimeter of the actual pool?

- A. 550 ft
- B. 800 ft
- C. 1,100 ft
- D. 1,500 ft

74. Maria rides her bicycle to school at a constant speed of 15 miles per hour. If the distance to school is 6 miles, how many **minutes** will it take Maria to get to school?

- E. 10
- F. 15
- G. 24
- H. 30

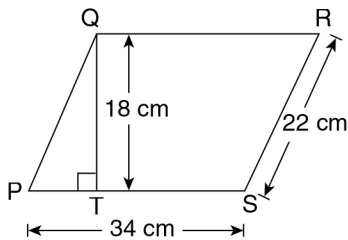
75.



In the figure above, $n \parallel p$. Straight line m intersects both line n and line p . What is the value of r ?

- A. 17
- B. 117
- C. 163
- D. 173

76.



On parallelogram PQRS above, the length of \overline{QT} is 18 centimeters. What is the area of the parallelogram?

- E. 112 sq cm
- F. 396 sq cm
- G. 612 sq cm
- H. 748 sq cm

77. Allison has 5 stamp albums with 576 stamps in each album. If she transfers her stamp collection to 6 albums, each holding 378 stamps, how many stamps will be left over?

- A. 198
- B. 612
- C. 620
- D. 632

78. Start with the number 135.28 and perform the following steps in order:

- Step 1: Multiply by 10.
- Step 2: Add 0.5 to the result of Step 1.
- Step 3: Drop the digits after the decimal point.
- Step 4: Divide by 10.

What is the result?

- E. 13.5
- F. 135
- G. 135.2
- H. 135.3

79. If $x = -2$, what is the value of $|x + x^2 + x^3| - |x + 2x + 3x|$?

- A. -18
- B. -6
- C. -2
- D. 2

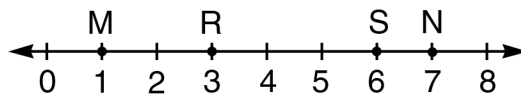
80. $\frac{3 + (-3)}{3 - (-3)} =$

- E. -1
- F. 0
- G. $\frac{1}{6}$
- H. 1

81. $12.96 \div 0.08 =$

- A. 1.62
- B. 16.2
- C. 162
- D. 1,620

82.



What is the distance between the midpoints of \overline{MN} and \overline{RS} ?

- E. $\frac{1}{2}$ unit
- F. 1 unit
- G. $1\frac{1}{2}$ units
- H. 2 units

83.

- I. $s - t$
- II. st^2
- III. s^t

If s is a positive integer and t is a negative integer, which of the above expressions **must** be a positive number?

- A. II only
- B. I and II only
- C. II and III only
- D. I, II, and III

84. What is the value of $\left(-\frac{3}{4}\right)\left(-\frac{2}{5}\right)$?

E. $-\frac{7}{20}$

F. $-\frac{3}{10}$

G. $\frac{3}{10}$

H. $\frac{7}{20}$

85. The table shows the income and expenses in a bicycle shop on one day.

BICYCLE SHOP TRANSACTIONS

Description	Income	Expense
Paid employees		\$120 × 4
Sold 2 bicycles	\$400 × 2	
Sold clothing	\$95	
Bought new door		\$500
Sold bike parts	p	

The sum of all transactions was \$70. What is the value of p ?

A. $-\$275$

B. $-\$85$

C. \$70

D. \$155

86. Dakota has four yardsticks and two 12-inch rulers. If she lays all four of the yardsticks and both rulers end-to-end, what is the maximum number of feet she can measure accurately at once?

E. 12 ft

F. 14 ft

G. 16 ft

H. 18 ft

87. In a fruit basket, the ratio of apples to oranges is the same as the ratio of cherries to walnuts. If there are 6 oranges, 16 cherries, and 48 walnuts, how many apples are there?

- A. 2
- B. 3
- C. 18
- D. 38

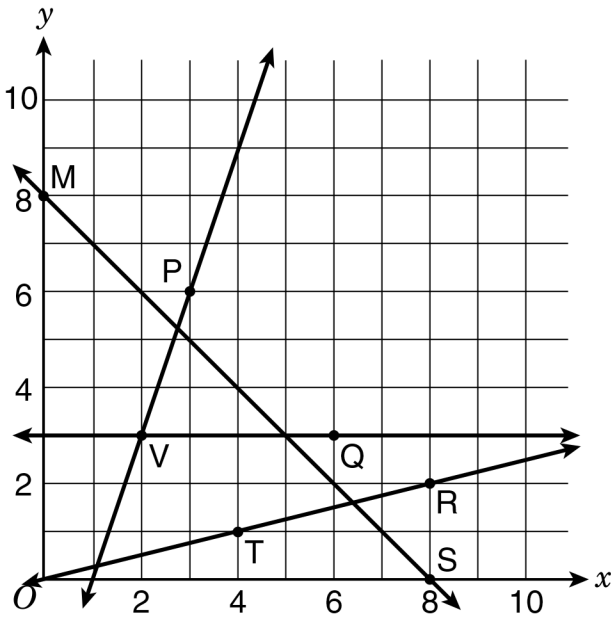
88. In a showing of an artist's works, the ratio of the number of paintings, drawings, and photographs shown is 3:5:4, respectively. If the number of drawings shown was 45, what is the total number of photographs and paintings that were shown?

- E. 36
- F. 63
- G. 84
- H. 108

89. For each $\frac{3}{8}$ foot of curtain width, $\frac{5}{6}$ yard of fabric is needed to make ruffles. How many yards of fabric are needed per foot of curtain width?

- A. $\frac{5}{16}$ yd
- B. $\frac{29}{24}$ yd
- C. $\frac{20}{9}$ yd
- D. $\frac{7}{2}$ yd

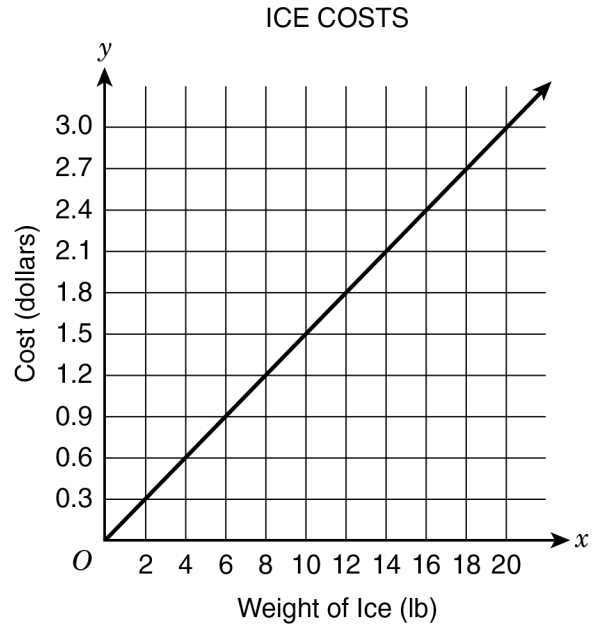
90.



Which straight line is the graph of a proportional relationship?

- E. \overleftrightarrow{MS}
- F. \overleftrightarrow{VP}
- G. \overleftrightarrow{VQ}
- H. \overleftrightarrow{TR}

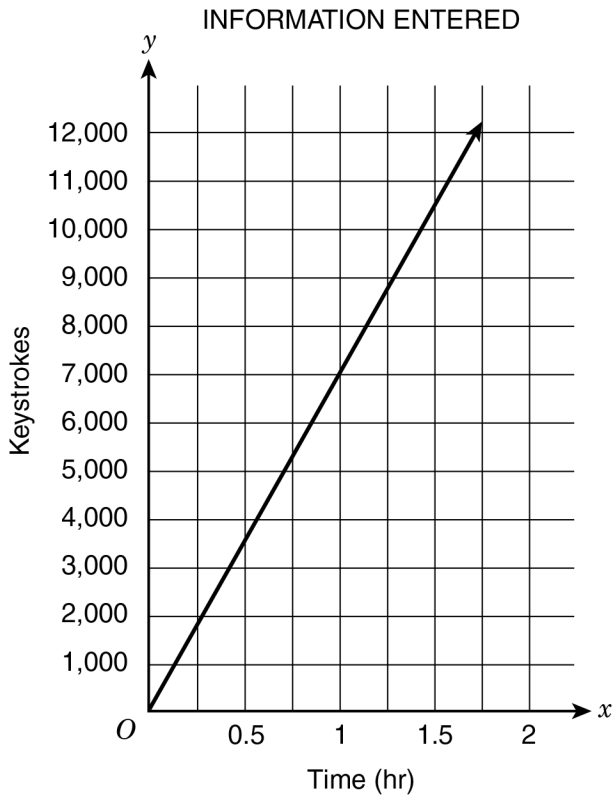
91.



Some friends are buying bags of ice for a picnic. The graph shows the cost of the ice, in dollars, in relation to the weight, in pounds. Which statement about a point on the graph is true?

- A. The point (20, 3) means that 3 lb of ice costs \$20.00.
- B. The point (1, 0.15) means that 1 bag of ice costs \$0.15.
- C. The point (10, 1.5) means that 10 lb of ice costs \$1.50.
- D. The point (0, 0) means that 0 lb of ice will be needed if 0 people go to the picnic.

92.



A clerk enters information on a computer. The graph shows the relationship between time, in hours, and the number of keystrokes the clerk makes. What is the meaning of the point $(1.5, 10500)$ on the graph?

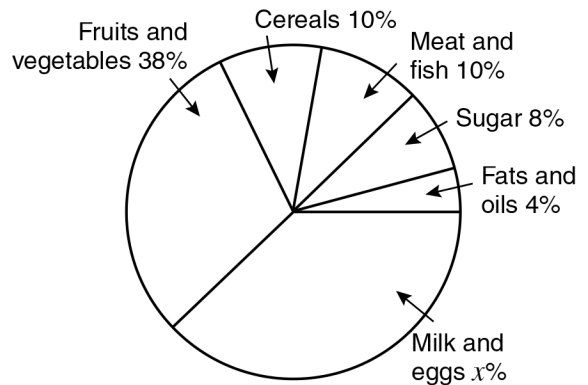
- E.** The clerk makes 10,500 keystrokes in each 1 hr of entering information.
- F.** The clerk makes 10,500 keystrokes in each 1.5 hr of entering information.
- G.** The clerk makes 15,750 keystrokes in each 1 hr of entering information.
- H.** The clerk makes 15,750 keystrokes in each 1.5 hr of entering information.

93. When the three-digit whole number $27 \underline{\quad} ?$ is divided by 3 or by 4, the remainder is zero. What is the missing digit?

- A.** 0
- B.** 2
- C.** 3
- D.** 6

94.

FOOD CONSUMPTION OF THE AVERAGE AMERICAN PER YEAR



Total consumption = 1,840 pounds per person

Based on the circle graph, how many pounds of milk and eggs does the average American consume each year?

- E.** 300
- F.** 368
- G.** 460
- H.** 552

95. Out of 2,000 high school seniors, 191 were enrolled in the Honor Society. What percentage of the entire group of 2,000 seniors were in the Honor Society?

- A. 0.955%
- B. 1.91%
- C. 9.55%
- D. 19.1%

96.

NUMBER OF VISITORS TO BROOKSIDE ZOO

	Male	Female
Children	360	340
Adults	210	290

The table above shows the number of people who visited Brookside Zoo in one day. The largest of the four groups made up what percentage of all visitors on that day?

- E. 30%
- F. 28%
- G. 24%
- H. 17%

97. A bag contains 40 tiles that are either red, green, or blue. A tile is selected at random, the color is recorded, and the tile is put back in the bag. This process is carried out 120 times, and 18 of those times a red tile is selected. Based on the information, what is the most likely number of red tiles in the bag?

- A. 6
- B. 15
- C. 18
- D. 30

98.

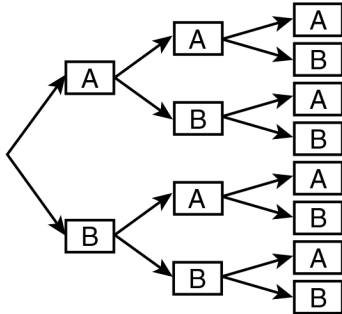
LAST YEAR'S TOTAL ATTENDANCE

Attendees	Number
Children	1,750
Adults	2,250
Seniors	1,000
Total	5,000

If 100 individuals will attend the museum next week, what is the best estimate (based on last year's attendance) of the number of children who will be in that group?

- E. 30
- F. 34
- G. 35
- H. 50

99. A teacher will randomly select 3 students to be on a school committee. He will choose either a student from Classroom A or a student from Classroom B with each selection. This tree diagram shows the selection possibilities.



What is the probability that the teacher will select 2 students from Classroom A and 1 student from Classroom B (in any order) for the committee?

- A. $\frac{1}{8}$
 B. $\frac{3}{8}$
 C. $\frac{1}{2}$
 D. $\frac{3}{4}$

100. A bag contains 15 marbles: 11 blue marbles and 4 red marbles. Sarah picks one marble randomly, returns it to the bag, and then randomly picks one marble again. What is the probability that she picks a red marble **both** times?

- E. $\frac{16}{225}$
 F. $\frac{16}{121}$
 G. $\frac{8}{15}$
 H. $\frac{121}{225}$

101.

Report	Subject	Topic Choices
#1	Geography	Kenya, Thailand, Chile, Greece, New Zealand
#2	English	R. Frost, L. Hughes, N. Giovanni
#3	Science	1997 Mars mission
#4	Math	π , regular polyhedrons

Anita is assigned to report on 1 topic in each of the 4 subjects shown in the table above. How many different sets of 4 reports are possible, according to the choices available to her?

- A. 10
- B. 24
- C. 30
- D. 44

102. A deck of 52 playing cards contains 13 hearts. Sara has 12 cards from this deck in her hand, 3 of which are hearts. The other cards remain in the deck. What is the probability that a card drawn at random from the remainder of the deck will be a heart?

- E. $\frac{1}{10}$
- F. $\frac{1}{4}$
- G. $\frac{3}{13}$
- H. $\frac{1}{3}$

- 103.** The table shows the probability of randomly picking each flavor of candy from a bowl.

PICKING CANDY FROM
A BOWL

Flavor	Probability
Butterscotch	0.57
Lemon	0.095
Maple	0.125
Strawberry	0.21

Which flavor is most likely to be randomly picked?

- A.** butterscotch
- B.** lemon
- C.** maple
- D.** strawberry

- 104.** This formula can be used to determine p , the number of pages that will be in a book that contains w words, with an average of r words per page, and f extra pages in the front for the title and publishing information.

$$p = \frac{1}{r}w + f$$

If the formula is solved for w , it can be used to find the number of words in a book with p pages. What will the formula be if it is solved for w ?

E. $w = r(p - f)$

F. $w = \frac{1}{r}p + f$

G. $w = f + rp$

H. $w = r + p + f$

105. A shipment contains 170 small boxes of medical supplies. In a random sample of 20 of these boxes, 8 have damage and the others are undamaged. Based on this sample, what is the best prediction of the number of undamaged boxes in the shipment, **not** including the boxes in the random sample?

- A.** 60
- B.** 68
- C.** 90
- D.** 102

106. In basketball, a player can earn 1 point for making a free throw and 2 points for making another basket. Marcus makes a mean of 8 free throws per game, and he scores a total of at least 25 points per game. The inequality below shows this relationship, where b represents the number of 2-point baskets Marcus makes.

$$2b + 8 \geq 25$$

What is the number of 2-point baskets Marcus needs to make if he wants to score at least his minimum total points for a game and make his mean number of free throws?

- E.** $b \leq 8$
- F.** $b \geq 9$
- G.** $b \geq 16$
- H.** $b \leq 25$

107. Nadia paid \$1.00 to mail a letter. The cost to mail a letter is \$0.55 for the first ounce of weight plus \$0.15 for each additional ounce. What was the weight, in ounces, of the letter Nadia mailed?

- A. 1.4
- B. 1.5
- C. 3
- D. 4

108.

COST OF ORANGES

Number of Oranges	Cost
4	\$1.80
6	\$2.70
9	\$4.05

The table shows the cost of oranges. What is the unit rate for the cost per orange?

- E. \$0.45
- F. \$0.90
- G. \$1.35
- H. \$1.80

109. A softball player bought bottles of water for her team to have at practice. The total number of bottles she bought, b , is proportional to n , the number of players at practice. Which equation represents the relationship between b and n ? The constant of proportionality is p .

- A. $b = pn$
- B. $b = p + n$
- C. $b + n = p$
- D. $b + n + p = 1$

110. Malik earns \$10 per hour at his job. He wants to change to a job that will pay \$12 per hour. What will be the percent increase in Malik's hourly pay if he makes this job change?

- E. 2%
- F. 20%
- G. 83%
- H. 120%

111. A rain gauge shows that 10 centimeters of rain fell yesterday. If 1 inch is equal to approximately 2.5 centimeters, about how many inches of rain fell yesterday?

- A.** 1
- B.** 2.5
- C.** 4
- D.** 10

112. The height of a plant, in millimeters, is proportional to the number of days the plant has grown. The plant has grown 20 millimeters in 8 days. What is the constant of proportionality, in millimeters per day?

- E.** 0.4
- F.** 2.5
- G.** 12
- H.** 20

113. Which table shows a proportional relationship?

A.

x	y
0	0
4	$\frac{3}{2}$
8	3

B.

x	y
0	1
4	$\frac{7}{2}$
8	6

C.

x	y
0	-1
4	$-\frac{1}{2}$
8	0

D.

x	y
0	0
4	12
8	16

114. Terry wants to pour cement around the edge of the circular patio in her backyard. The patio has a radius of 5 feet. What is the distance, in feet, around the edge of the patio? Use 3.14 for π .

- E.** 15.7
- F.** 31.4
- G.** 49.3
- H.** 78.5

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. ■