NYC Guide to the **Specialized High Schools Admissions Test - SHSAT**

for 2022 Admissions

The information in this guide is accurate at the time of publication but may be subject to change. Find the most up-to-date information on admissions, events, schools, and programs at schools.nyc.gov/SHS, schools.nyc.gov/High, and MySchools.nyc.

It is the policy of the New York City Department of Education to provide equal educational opportunities without regarding to actual or perceived race, color, religion, age, creed, ethnicity, national origin, alienage, citizenship status, disability, weight, gender (sex) or sexual orientation, and to maintain an environment free of harassment on the basis of any of these grounds, including sexual harassment or retaliation. Inquiries regarding compliance with appropriate laws may be directed to: Director, Office of Educational Opportunity, 65 Court Street, Room 1102, Brooklyn, New York 11201. Telephone **718-935-3320** / Toll-free: **877-332-4845**.

NYC Department of Education

CONTENTS

1.0 PREPARE TAKE THE SHSAT 4

1.1 Know What to Expect 4

1.2 Take the Practice Tests 4

1.3 Check Your Answers from the Sample Test 5

1.4 How to Prepare for the English Language Arts Section 6

2.5 How to Prepare for the Math Section 18

2.0 GET READY FOR TEST DAY 30

2.1 What to Bring to Your Testing Session 30

2.2 What NOT to Bring 30

2.3 Test Day Expectations 31

2.4 Filling In the Answer Sheet 31

2.5 Student Misconduct 32

3.0 WHAT HAPPENS AFTER I TAKE THE SHSAT? 33

3.1 Claims of Testing Irregularities 33

SAMPLE TEST A 34

General Directions 34

Sample Test 36

Form A Sample Test – English Language Arts Explanations of Correct Answers 90

Form A Sample Test – Mathematics Explanations of Correct Answers 120

Form A Sample Test – Answer Key 135

SAMPLE TEST B 136

General Directions 136

Sample Test 138

Form B Sample Test – English Language Arts Explanations of Correct Answers 192

Form B Sample Test – Mathematics Explanations of Correct Answers 230

Form B Sample Test – Answer Key 241

Grade 9 Mathematics Sample Questions 242

Grade 9 Mathematics Explanations of Correct Answers 246

Grade 8 Grid-In Sample Problems 249

Grade 8 Grid-In Explanations of Correct Answers 251

SHSAT Sample Answer Sheets 256

SHSAT Blank Grid-ins to be Used with Sample Items 258

1.0 PREPARE TAKE THE SHSAT

Families should review this section together so that children are well prepared for the test.

1.1 Know What to Expect

- ☐ **Become very familiar with the design of the test by reviewing the following in this handbook:**
  - description of the test on the SHSAT website
  - the two full-length sample tests
  - each sample test's answer key and explanations
  - extra samples for the Math grid-in questions
  - specific sample Grade 9 questions (if you plan to take the test as a 9th grader)
- ☐ **Become familiar with the sample items.**
  - ELA sample items start on page 7.
  - Math sample items start on page 20.
- ☐ **Become familiar with the directions for each section so that you:**
  - fully understand what you have to do for each part of the test: Revising/Editing Parts A & B, Reading Comprehension, Math Grid-Ins, and Math Multiple-Choice
  - can focus your time on answering the questions rather than reading the directions on test day
- ☐ **Become familiar with the answer sheet included with the practice test so that you can:**
  - easily fill in your name, grade level, and birth date on test day before you start the test
  - easily, accurately, and quickly mark your answers once the testing session begins on test day

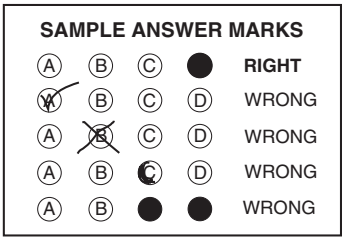
1.2 Take the Practice Tests

- ☐ **Make a plan.**
  - There are two sample tests in this packet, and you can use them in any way you want; you are encouraged to use at least one of the tests to practice taking a full test under timed conditions.
  - You have 180 minutes to complete the test; eligible English Language Learners or students with extended time as an approved testing accommodation have 360 minutes to complete the test.
  - You may begin the test in whatever section/part you want, so decide in advance what order you will take the test in.
  - You may divide time between the ELA and Math sections however you want.
- ☐ **Print out the two sample SHSAT answer sheets**
- ☐ **Keep track of your 180 minutes of test time by using a watch or clock.**
- ☐ **Start answering questions in either the ELA or Math section.**
  - Remember, it is up to you to decide which section you take first!

- Work carefully, but keep moving at a comfortable pace.
- Do not spend more than a couple minutes on any one question.

☐ **Bubble your answers on the answer sheet as you work through each question.**

☐ **Answers must be completely filled in.**



- All answers must be recorded on the answer sheet BEFORE time is called. ***Remember: you won't be given extra time to transfer answers to the answer document!***

☐ **An educated guess can be the right answer.**

- Do this by eliminating the answer choice(s) that are definitely wrong, and then choose one of the remaining answers.
- Your score is based on the number of *correct* answers marked on the answer sheet. Because there is no penalty for wrong answers, omitting a question will not give you an advantage.

☐ **Check your work if you have time remaining.**

- If you finish before time is up, go back over your work to make sure that you followed instructions, did not skip any questions, and did not make careless mistakes. Remember: there is no penalty for wrong answers, so make sure you do not leave any questions blank!
- Note that on testing day, you must remain in the testing room for the entire duration of the test (180 minutes).

1.3 Check Your Answers from the Sample Test

☐ **After you complete the sample test, check your answers against the list of correct answers.**

- Read the explanations of the correct answers to see the kinds of mistakes you may have made.
- Check to see whether there is a pattern to your errors.
  - **ELA Example:** *did you miss many questions about central idea or author's purpose?*
  - **Math Example:** *did you miss many questions because of miscalculations?*
- Seek out opportunities to do more practice in areas that challenged you!

1.4 How to Prepare for the English Language Arts Section

The English Language Arts section consists of 57 multiple-choice questions that assess revising/editing skills and reading comprehension. These questions are aligned to the **New York State Learning Standards**. The pages that follow provide tips for answering the revising/editing and the reading comprehension questions.

Overview of Revising/Editing Part A

The language skills assessed in this section are based on the Language section of the New York State Learning Standards for Grade 7, as well as skills or standards that may have been introduced in earlier grades, such as the Language Progressive Skills. Each question directs you to read a sentence, a list of sentences, or a paragraph with numbered sentences. Then you are asked to address issues related to conventions of language or punctuation. Examples include:

- selecting the best correction for an error
- identifying a sentence with an error
- improving the writing by combining sentences or revising part of a sentence

Tips for Revising/Editing Part A

First, read the question.

- For most items, read the question first rather than reading the text first so that you know what type of issue to look for while reading the text.

Next, read the text in the box and take notes on the issues you observe, while being mindful of time.

- Are there words, phrases, or sentences that are difficult to read due to an error in language usage or punctuation?
- Is there any part of the text that could be written more clearly, concisely, or precisely?
- Quickly mark up the text when you notice an issue. This may help you to select an answer option.
- Keep in mind that your notes should focus on the specific topic of the question.



- Before test day, plan how much time you will spend on Part A; this will help you to be efficient when answering each question on test day.

Sample Questions for Revising/Editing Part A

Sample 1: Select the best correction/s for an error (or errors).

Read this paragraph.

> (1) With its luscious trees and grassy fields stretching like a green ribbon across Manhattan, New York City's Central Park is a natural oasis amid the bustling city. (2) While more than 25 million people visited the park each year, they are also a temporary home to an abundance of migratory birds. (3) During the spring and fall migrations, the park becomes a bird watcher's paradise, prompting scores of avid birders with binoculars in hand to flock to it. (4) More than 270 species of birds, including swallows, thrushes, and at least 25 different species of warblers, have been observed making the park their home in the big city.

How should the paragraph be revised?

A. Sentence 1: Change ***its*** to **their**, AND change ***is*** to **was**.

B. Sentence 2: Change ***visited*** to **visit**, AND change ***they are*** to **it is**.

C. Sentence 3: Change ***becomes*** to **became**, AND change ***it*** to **them**.

D. Sentence 4: Change ***have been*** to **had been**, AND change ***their*** to **its**.

To determine the best revisions for this paragraph, read the possible changes listed in the first option as you read Sentence 1 in the paragraph. If a revision does not need to be made, continue reading each sentence and answer option until you find the correct answer.

Sample 2: Identify a sentence with an error.

Read this paragraph.

> (1) Madison Square Garden is the oldest sports arena in the New York City area, having opened in 1968. (2) The construction of the Garden caused controversy when portions of the iconic Pennsylvania Railroad Station were demolished, leading to the creation of a commission dedicated to preserving New York City's historic landmarks. (3) Although the Garden is home to major sports teams and is a frequent host of major concerts, city officials are concerned that it stands in the way of expanding and modernizing Pennsylvania Station, which operates beneath the arena. (4) In 2013, the city council voted to give the owners of Madison Square Garden a 10-year operating permit, meaning that Madison Square Garden may need to relocate by 2023.

Which sentence should be revised to correct an error in sentence structure?

E. sentence 1
F. sentence 2
G. sentence 3
H. sentence 4

To identify the sentence, read carefully while being mindful of time; don't just skim. The error could be anywhere in the paragraph.

Note that the error is specific to *sentence structure*, which means it relates to how the words and phrases are placed in a sentence to convey (represent) the relationship between ideas.

Sample 3: Improve the writing by combining sentences or revising part of a sentence.

Read these sentences.

> (1) Whales are the giants of the ocean, and they spend their lives in underwater song. (2) They use their voices to attract a mate, call out to one another, and help navigate new environments.

What is the best way to combine the sentences to clarify the relationship between the ideas?

A. Whales are the giants of the ocean, spending their lives in underwater song, using their voices to attract a mate, calling out to one another, and helping navigate new environments.

B. Whales, the giants of the ocean, spend their lives in underwater song, use their voices to attract a mate, call out to one another, and help navigate new environments.

C. Whales are the giants of the ocean, spend their lives in underwater song, use their voices to attract a mate, call out to one another, and help navigate new environments.

D. Whales, the giants of the ocean, spend their lives in underwater song, using their voices to attract a mate, call out to one another, and help navigate new environments.

To combine sentences, ask yourself

1. Are there any repeated words/ideas that can instead be used just once?
2. How are the different ideas connected? Do they represent a cause and effect, opposing ideas, a sequence, etc.?

Sample 1 Explanation

(B) Sentence 2 of the paragraph should be revised to correct the errors in verb tense and pronoun agreement. The paragraph is in the present tense, so the past tense "visited" needs to be changed to "visit." Additionally, the pronoun "they" needs to be changed to the pronoun "it." The pronoun refers to "the park," which is a singular noun; it does not refer to "people," which is plural. Option B is correct because the revisions in the option correct these errors.

Sample 2 Explanation

(E) Sentence 1 of the paragraph should be revised to correct an error in sentence structure. Specifically, the sentence should be revised to correct a misplaced modifier. As the sentence is written, the phrase "having opened in 1968" incorrectly modifies "the New York City area" instead of modifying "Madison Square Garden." The correct placement of the phrase would change the beginning of sentence 1 to "Madison Square Garden, having opened in 1968, . . ." Option E correctly identifies sentence 1 as having an error in sentence structure.

Sample 3 Explanation

(D) Option D shows the best way to combine these sentences clearly and precisely because it shows the relationship between the key ideas of whales spending their lives in underwater song and the practical uses of their song.

Overview of Revising/Editing Part B

Questions in Part B assess your ability to read a text and then make decisions that improve the overall quality of the writing. The subjects presented in these texts will include historical and current events; people, places, and technology; and phenomena in the biological sciences, physical sciences, and social sciences. Each sentence is numbered so that you can quickly locate and refer to specific parts of the passage.

The text may contain errors such as

- language misuse
- missing or unnecessary supporting details
- missing or inappropriate transitional words, phrases, or sentences
- a missing or an unclear introductory statement or concluding statement
- confusing or illogical organization
- other errors related to language and writing standards

Tips for Revising/Editing Part B

First, read the text carefully while being mindful of time; don't skim.

- You need to understand the author's purpose, main idea, and supporting details of the text in order to answer questions about how the text could be better developed and organized, which requires careful reading.
- You may notice sentences and paragraphs that seem confusing, illogical, unnecessary, disorganized, or generally difficult to read.
- Note that the order in which you should read the text and question(s) for Part B is different from Part A. In Part A, you should read the *question* first. In Part B, you should read the *text* first.

Next, read each question carefully, while being mindful of time.

- Refer back to the text and reread the relevant sentences or paragraphs that are mentioned in the question.
- You will also likely need to skim the sentence before and after the sentence that is referenced in a question.
- Consider each answer option, rereading the text as necessary (and as time permits). Determine whether the option represents the best revision.



- Before test day, plan how much time you will spend on Part B; this will help you to be efficient when answering each question on test day.

Sample Questions for Revising/Editing Part B

Game Night

(1) Some people think that board games are outdated and boring, unable to provide much entertainment to today's electronic-savvy teens. (2) But opening a cardboard box full of colorful and sometimes elaborate game pieces can offer a refreshing experience, one that cannot be matched by a video game controller and headset. (3) Playing board games is really quite fun.

(4) Board games have exploded in popularity in the past several years as people have discovered how entertaining and interesting a complex or strategic game can be. (5) In the board game Ticket to Ride, players compete against one another. (6) The goal is to create a long railway that connects destinations on a map. (7) This requires collecting resources and building rail lines in strategic places. (8) The game encourages players to think in new ways, and the brain gets exercise that it needs in order to grow.

(9) Playing board games with others can also help bring people together. (10) When you take part in a board game, you get to know the other players. (11) People separated by generations can find common ground across the table from one another when they are all enjoying the same board game. (12) In addition, playing board games can often encourage discussion among players about a variety of topics. (13) Some games are even developed as learning games and aim to teach players about a topic as they play. (14) In a world where digital interactions tend to occur more frequently than true face-to-face interactions, coming together in person to enjoy a board game can be a fun way to maintain or create connections with other people.

(15) In addition to helping people develop relationships, playing board games gives people an opportunity to hone skills that apply to real life. (16) Competitive board games challenge people to compete and to use strategies to outwit one another. (17) Cooperative board games require players to collaborate and to use their individual strengths to achieve a common goal. (18) The act of playing almost any board game can help a person learn to be a humble winner and a gracious loser and help improve a person's focus, self-control, and critical thinking.

(19) Playing board games is an excellent way to exercise one's brain, engage with other people, and practice essential strategies for handling real-life situations. (20) There are hundreds of competitive and cooperative board games that can provide the ideal balance between entertainment and challenge.

To maintain formal style, writers often rely on very precise, concise, and sometimes highly academic language. For questions like this, you should read and consider the style of the entire passage and then consider which option best maintains this style.

1. Which revision of sentence 10 best maintains the formal style established in the passage?

A. When you play a board game with people, you become friendly with them.

B. When people participate in a board game, they develop relationships with each other.

C. When people get together for a board game, they learn about each other.

D. When you become involved in a board game with people, you make friends with the players.

2. Which sentence should be added after sentence 18 to help develop the ideas in the fourth paragraph (sentences 15–18)?

E. Playing board games can teach a person a lot about how to manage the daily obstacles that are a natural part of life.

F. The skills used to play games can be useful, as almost all occupations require people to make decisions that can have positive or negative results.

G. People who learn these things will develop strong interpersonal skills, which are an advantage when developing relationships.

H. Concentrating on a goal, responding well to positive and negative outcomes, and making logical decisions are valuable skills in many situations.

3. Which concluding sentence would best follow sentence 20 and support the main argument presented in the passage?

A. People should seek out board games that require players to develop complex strategies to defeat opponents.

B. People should choose board games that appeal to them and encourage friends and family to take a seat at the gaming table.

C. People should play board games that involve significant player interaction as they try to achieve the same or different goals.

D. People should find board games that allow friends and family to reap the benefits of regularly playing games.

Sample 1 Explanation

(B) Option B is the correct response because this revision uses precise, formal language ("participate" and "develop relationships") that maintains the style established in the passage. In addition, this option avoids using the informal second person ("you") and instead uses "people" to refer to board-game players, which further contributes to the formal style.

Sample 2 Explanation

(H) Option H is the correct response because this sentence further develops the ideas that are presented in sentence 18 (that playing board games can help a person learn to win and lose with grace and can "help improve a person's focus, self-control, and critical thinking"). This sentence develops these ideas by explaining that these qualities are valuable in situations beyond playing board games.

Sample 3 Explanation

(B) Option B is the correct response because it logically follows the description in sentence 20 that there are "hundreds of competitive and cooperative board games" with the suggestion that a person should choose one that they find appealing or interesting. The passage explains the benefits of playing board games, and the sentence in option B supports the main argument of the passage by emphasizing that playing board games is a fun way to bring people together.

Overview of Reading Comprehension

This section assesses your ability to read and comprehend up to six texts of both literary and informational genres, which may include any of the text types listed below.

Informational genre may include	Literary genre may include
expository/explanatory texts	poetry
argumentative texts	adventure stories
functional text in the form of: • personal essays • speeches • opinion pieces • essays about art or literature • biographies • memoirs • journalism • historical, scientific, technical, or economic accounts written for a broad audience	historical fiction
	mysteries
	myths
	science fiction
	realistic fiction
	allegories
	parodies
	satire

Tips for Reading Comprehension

Read the text carefully while being mindful of time; don't skim.	➤ Read the text carefully to ensure you have an accurate and text-based understanding of both the big ideas and important details. ➤ Monitor your comprehension while you read; if a sentence or paragraph is confusing, try quickly rereading it.
Take notes.	➤ Jot *brief* notes to identify important details, summarize ideas, etc., while reading the text in its entirety.
Read the question carefully.	➤ Read the question carefully so that you clearly understand what the question is asking. For example, do you need to focus on details in just one paragraph or multiple paragraphs? ➤ If time permits, reread the relevant part or parts of the text.
Try to determine the answer before reading the answer options.	➤ Think of the answer before reading each option. Then read each answer option, eliminating ones that definitely seem incorrect, and choose the one that best matches your thinking. ➤ Base your answers only on the content of the text (and associated images or graphics where relevant). Do not depend on your prior knowledge of the topic.
	➤ Before test day, plan how much time you will spend on each of the texts and their related questions in the Reading Comprehension section; this will help you to be efficient when answering each question on test day.

Snoozing While Soaring

1 Certain types of birds soar for hundreds of miles, over land, over sea—and never stop to rest. That kind of endurance seems impossible to us, since we as people need time to rest and sleep. Researchers set out to learn how birds could fly for such long distances without restorative rest. They found that for some birds, settling in for a good night's rest is not always a necessity.

2 In 2013 Felix Liechti and his research colleagues at the Swiss Ornithological Institute published results of a study about the flight habits of Alpine swifts, small birds that migrate annually between Europe and Africa. Liechti and his team fitted the birds with small electronic tags that recorded the birds' acceleration and their pitch, or angle relative to the ground. The data revealed that the birds remained completely airborne during their time in Africa, a period of over 200 days. Since all animals require sleep, the researchers inferred that the birds slept from time to time on their long journey. However, since the electronic tags recorded only movement such as gliding or flying, and not brain waves, the question of whether birds sleep during flight remained unanswered.

3 Researcher Niels Rattenborg from the Max Planck Institute for Ornithology also delved into this question. In a 2006 article Rattenborg explained that it was theoretically possible that birds could undergo a certain type of sleep while flying. Like mammals, Rattenborg explained, birds experience different types of sleep, including slow-wave sleep (SWS). Rattenborg argued that SWS during flight is plausible because SWS can happen in one hemisphere of the brain at a time, leaving half of the brain essentially awake while the other half sleeps. The eye associated with the "awake" hemisphere can still function, allowing a bird to see where it is going. Rattenborg decided that electroencephalogram (EEG) recordings of birds' brain waves would ultimately be necessary to determine whether a bird can actually sleep in flight.

4 Eventually, Rattenborg and his team were able to create an experiment to prove this theory by studying frigatebirds from the Galápagos Islands. These enormous birds are good subjects for avian-sleep research because they fly far out to sea to hunt fish. However, unlike many seabirds, they cannot land on the water to rest because the physical build of their body—long wings, poorly webbed feet, and minimal feather waterproofing—makes them unable to take off again from the surface of the water. Rattenborg concluded that they must remain in flight for up to two months at a time.

5 In an article from 2016, Rattenborg outlined the team's research methods and conclusions. The team humanely implanted EEGs on the skulls of several frigatebirds. After analyzing the EEG readings of the birds while in flight, the team determined that the frigatebirds slow-wave slept for about ten seconds at a time at points when the birds were gliding upward via warm air currents, typically the safest part of the flight. While in flight the birds slept for only 45 minutes a day, which is just enough rest for the birds to function during these long flights. They later recovered from the stress of going with very little sleep when they rested for approximately twelve hours each day back on land.

6 Using EEG recordings, Niels Rattenborg solved the puzzle of when birds sleep while traveling long distances. His evidence proved that his theory was correct, and the birds proved themselves to be the ultimate multitaskers as they manage sleep and flight at the same time.

1. Read this sentence from paragraph 1.

> **That kind of endurance seems impossible to us, since we as people need time to rest and sleep.**

The words "endurance" and "impossible" in the sentence convey

A. amazement about the physical capability of birds to remain in flight for extended periods of time over long distances.

B. uncertainty about the conditions that allow birds to stay in flight for extended periods of time without rest.

C. excitement about the opportunity to share research into how birds fly for extended periods of time.

D. skepticism about discovering how birds can fly for extended periods of time with little or no rest.

2. Which sentence from the passage best supports the idea that birds seem to be capable of making prolonged flights without sleeping?

E. "The data revealed that the birds remained completely airborne during their time in Africa, a period of over 200 days." (paragraph 2)

F. "In a 2006 article Rattenborg explained that it was theoretically possible that birds could undergo a certain type of sleep while flying." (paragraph 3)

G. "Rattenborg decided that electroencephalogram (EEG) recordings of birds' brain waves would ultimately be necessary to determine whether a bird can actually sleep in flight." (paragraph 3)

H. "While in flight the birds slept for only 45 minutes a day, which is just enough rest for the birds to function during these long flights." (paragraph 5)

3. Which statement best summarizes the conclusions of the studies presented in the passage?

- **A.** Scientists used monitoring devices to determine that the seconds when migratory birds glide upward in warm air currents are safest for slow-wave sleep.
- **B.** Using monitoring devices, scientists confirmed that migratory birds sleep for an extremely short amount of time while in flight and recuperate by sleeping for an extended period of time after they land.
- **C.** Scientists used monitoring devices to determine that migratory birds require significantly less sleep than many other animals and to show that the birds use only one hemisphere of their brain while flying.
- **D.** Using monitoring devices, scientists confirmed that some types of migratory birds rely on slow-wave sleep cycles in order to stay in flight for extended periods of time.

4. The overall organizational structure of the passage allows the author to

- **E.** contrast the significance of research findings related to small migratory birds with those related to large migratory birds.
- **F.** compare the in-flight sleep patterns of the various types of birds examined in several studies.
- **G.** emphasize the role of technology in studying sleep patterns of birds in flight.
- **H.** illustrate how researchers acquired a better understanding of the sleep patterns of birds in flight.

Sample 1 Explanation

(A) Option A is the correct response because it explains that the words "endurance" and "impossible" convey amazement at the birds' ability to remain in flight for so long without resting—as opposed to human beings, who "need time to rest and sleep" (paragraph 1). Specifically, the word "impossible" implies a sense of wonder or disbelief at the birds' endurance, which allows them to continue flying for hundreds of miles without stopping. The words "endurance" and "impossible" support the idea expressed later in the passage that these birds are the "ultimate multitaskers" (paragraph 6).

Sample 2 Explanation

(E) Option E best supports the idea that birds seem to be capable of making prolonged flights without sleeping, because it expresses the idea that the birds "remained completely airborne" during "a period of over 200 days" (paragraph 2). This information is significantly more precise than the information in the other answer options. Therefore, option E provides more compelling evidence to support the idea in the question than the other answer options provide.

Sample 3 Explanation

(D) Option D best summarizes the conclusions of the studies presented in the passage. While all the options include some important details about the study of migratory birds, option D accurately states the key conclusion of these studies, which is that these birds "rely on slow-wave sleep cycles in order to stay in flight for extended periods of time" (paragraph 5). Option D's emphasis on the key conclusion rather than on key details makes it the correct response.

Sample 4 Explanation

(H) Option H best explains the effect of the overall structure of the passage. The passage presents an unresolved question in paragraph 2, while paragraph 3 explains one researcher's attempt at seeking an answer to the question. Paragraph 4 describes the bird the researchers chose due to its physical makeup and feeding habits. Paragraphs 5 and 6 illustrate the details and outcome of the study, revealing the researchers' conclusion. Therefore, the overall structure of the passage illustrates how researchers improved their understanding of the sleep patterns of birds in flight.

2.5 How to Prepare for the Math Section

The Math section consists of word problems and computational questions in either a grid-in or multiple-choice format. There are five grid-in questions and 52 multiple-choice questions. The Math questions involve application of mathematical skills, mathematical terms, and general concepts from the New York State Learning Standards for Mathematics. However, as one of the purposes of this test is to identify students who will benefit from an education at a Specialized High School, the SHSAT Math items will require you to apply familiar Math skills to complex, multi-step problems.

Math questions on the Grade 8 test forms are based on the New York State Learning Standards through Grade 7. Math questions on the Grade 9 test forms are based on material through Grade 8.

The following pages outline a variety of tips to help you prepare for taking the Math section on the SHSAT. They include the following:

- tips to improve your Math skills in Math topics you need more practice with
- tips to familiarize you with expectations that are specific to the SHSAT and may therefore be different from other Math tests you take
- tips specifically for answering multiple-choice Math questions
- tips specifically for answering Math grid-in questions

Note: Answers and answer explanations for all the Math sample items can be found on pages 23–25.

Tips to Improve Your Math Skills

Review Math resources.	➤ Use your Math textbook, seek out other Math resources at school or at your local library, or ask your teacher to recommend resources for you to use.
Practice solving Math questions every day. Solve both basic and challenging questions.	➤ Basic questions reinforce Math skills such as simplifying fractions and applying the concept of statistics. ➤ More challenging questions require setting up complex equations with multiple steps. They may also require using various types of Math skills. For example, you may use fractions, solve for equations, and apply your knowledge of statistics to answer one question. ➤ If you are unsure of how to answer a question, skip it and return to it after answering the other questions. You may have a better idea of how to solve a problem after completing other questions.

Things to Keep in Mind While Preparing for the Math Section

Memorize mathematical terms, symbols, and formulas that you use in your Math class.

- You must know the meanings of mathematical terms that are appropriate for your grade level, such as "parallel" and "perpendicular," as well as the symbols that represent those terms.
- You can find mathematical terms, symbols, and formulas, such as those for perimeter and area of different figures, in the materials for your Math classes and online in the Grade 7 and 8 New York State Learning Standards.
- Definitions and explanations for terms, symbols, and formulas will NOT be given in the test booklet. Practice using them to solve questions until you have memorized them and can use them with ease.

Do not use a calculator when solving questions.

- The use of calculators is **not** permitted while taking the SHSAT.



- Before test day, plan how much time you will spend on the Math section; this will help you to be efficient when answering each question on test day.

Tips for Solving Math Problems

Read each question carefully.

- Read carefully so that you accurately set up complex problems using *all* the important information from the question.
- Mark up the question, as in Sample 1, to ensure you include all the information when solving the problem.
- Change words from the question into mathematical symbols (as noted in Sample 1 and Sample 2).

Sample 1

+ x, x+1 = −15

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

Mark up the question to prepare for solving the problem.

Sample 2

J 2K J−5

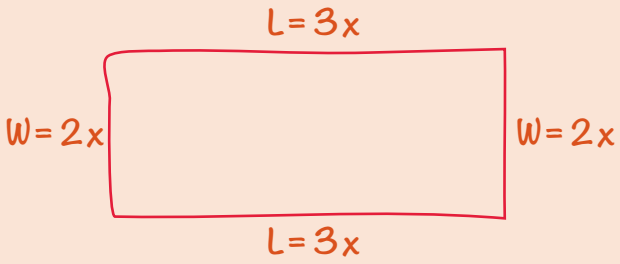
Jenny starts a game with twice as many marbles as Keiko. Jenny gives Keiko 5 marbles, but she still has 10 more than Keiko. How many marbles did Jenny have to start with?

A. 25
B. 30
C. 35
D. 40

Change words from the question into mathematical symbols.

Draw figures or diagrams for questions that do not have them.	➤ Draw figures or diagrams, like in the example below, to help you visualize what the question is describing.

Sample 3



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

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

Label figures and diagrams.

Take one step at a time.

- Some questions ask you to combine a series of steps. Write out one step at a time, like in the example below, to solve multi-step problems.

Sample 4

1 dollar = 7 lorgs
1 dollar = 0.5 dalt

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

A. $28
B. $52
C. $182
D. $282

$\frac{140}{x} = \frac{7}{1}$

$7x = 140$

$x = \$20$

Step 1: Convert lorgs to dollars.

$\frac{16}{x} = \frac{0.5}{1}$

$0.5x = 16$

$x = \$32$

Step 2: Convert dalts to dollars.

$20 + 32 = \$52$

Step 3: Add your conversions of lorgs and dalts together.

Tips for Math Multiple-Choice Questions

Most multiple-choice questions should be done by working out the answer.

- Solving the problem *before* looking at the answer options is more effective than looking first at the answer options and *then* trying to estimate the accuracy of each one to get to the correct answer.

It is best to solve problems on paper (rather than just in your head) and to focus on *solving* rather than *selecting*.

- When you get an answer, look at the choices listed. If your answer is included among the choices, mark it. If it is not, reread the question and solve it again.
- If your answer is not among the answer options, consider other ways to write your answer. For example; $\frac{5}{9}(3 + x)$ is equivalent to all of the following:
  $\frac{5(3 + x)}{9}$ and $\frac{5}{3} + \frac{5}{9}x$ and $\frac{5}{3} + \frac{5x}{9}$.
- If your answer is still not among the answer options, make your best guess and/or come back later if you have time.

Sample 1 Explanation

If x is the smaller consecutive integer, then x +1 is the larger consecutive integer. Use their sum −15 to find x:

$x + (x + 1) = -15$
$2x + 1 = -15$
$2x = -16$
$x = -8$

The two consecutive integers are −8 and −7.
One is added to the smaller integer: −8 + 1 = −7.
Two is subtracted from the larger integer: −7 – 2 = −9.
Find the product: $-7 \times -9 = 63$.

Sample 2 Explanation

(D) Set up some equations.

Jenny (J) has twice as many marbles as Keiko (K): $J = 2K$
Jenny gives Keiko 5 marbles, so now they each have: $J - 5$ and $K + 5$ marbles.
Jenny still has 10 more than Keiko:
J – 5 = (K + 5) + 10

To find how many marbles Jenny had to start with, solve $J = 2K$ for K and substitute that into the second equation:

In equation $J = 2K$, solve for K: $K = \frac{J}{2}$.
Substitute $\frac{J}{2}$ in for K.

$J - 5 = (K + 5) + 10$

$J - 5 = \left(\frac{J}{2} + 5\right) + 10$

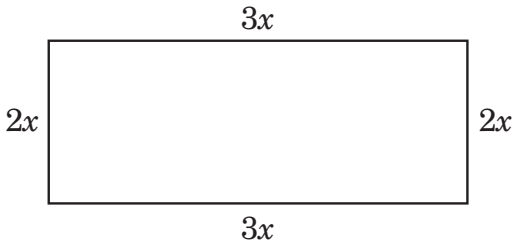
$J - 5 = \frac{J}{2} + 15$

$\frac{J}{2} = 20$

$J = 40$ marbles

Sample 3 Explanation

(F) Let $2x$ = the width and $3x$ = the length.
Draw the rectangle to help visualize.



Since $2w + 2l = P$, we get

$2(2x) + 2(3x) = 510$
$4x + 6x = 510$
$10x = 510$
$x = 51$
$2x = 102$cm and $3x = 152$ cm

Sample 4 Explanation

(B) Use proportions to make the conversions:

Lorgs to dollars:

$$\frac{140}{x} = \frac{7}{1}$$

$7x = 140$

$x = \$20$

Dalts to dollars:

$$\frac{16}{x} = \frac{0.5}{1}$$

$0.5x = 16$

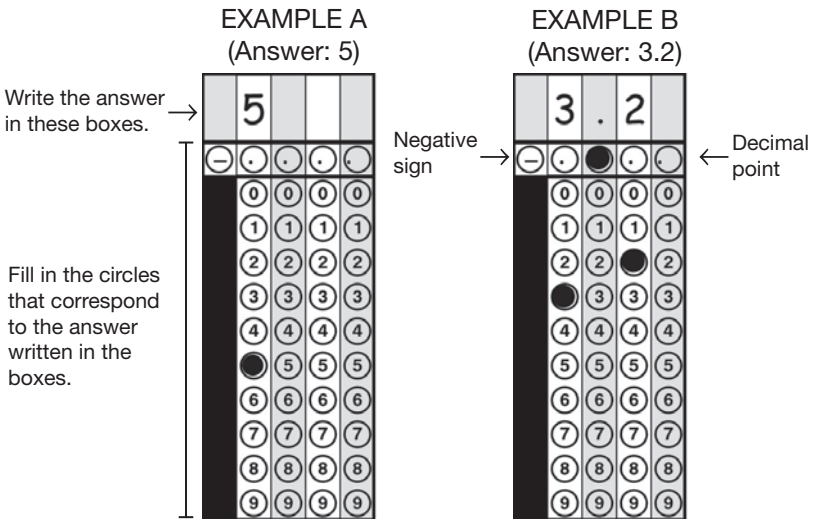
$x = \$32$

Total dollars = 20 + 32 = $52

How to Complete Math Grid-In Questions

The Math section includes five grid-in questions for which students must solve computational questions and provide the correct numerical answer rather than selecting the answer from multiple-choice options.

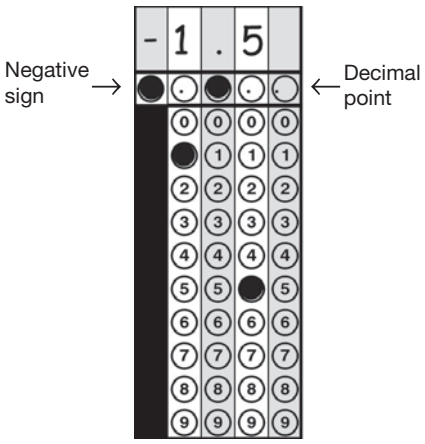
- The grid for each question is made up of five columns. When you record your answer in the grid, begin on the left.
- For each grid-in question, write your answer in the boxes at the top of the grid.
- Print only one number or decimal symbol in each box. Use the "." symbol if your response includes a decimal point.
- Fill in the circle under the box that matches the number or symbol that you wrote.



How to Answer Math Grid-In Questions *(continued)*

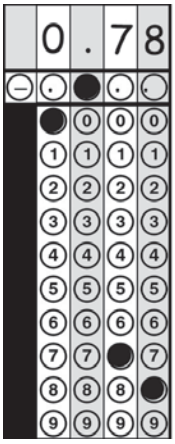
- The first column on the left of the grid is ONLY for recording a negative sign, as in **Example C**. If your answer is positive, leave the first column blank and begin recording your answer in the second column.

EXAMPLE C
(Answer: −1.5)

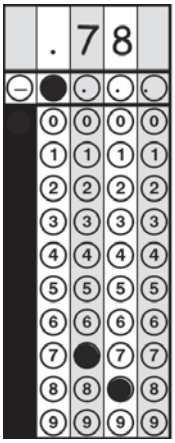


- When your answer includes a decimal, make sure to fill in the circles that match all parts of your answer. For example, if your answer is 0.78, fill in the circles under the 0, ".", 7, and 8, like in **Example D**. Note that an answer displaying .78 will also be accepted as correct, like in **Example E**.

EXAMPLE D
(Answer: 0.78)



EXAMPLE E
(Answer: .78)

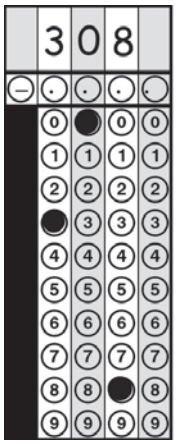


Examples D and E show acceptable ways to grid the same answer.

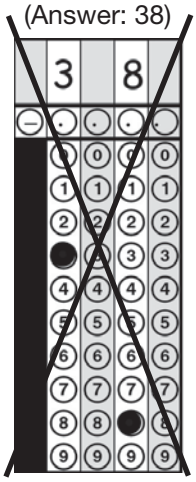
How to Answer Math Grid-In Questions *(continued)*

- Do not leave a box blank in the middle of an answer. If there is a blank in the middle of your answer, it will be scored as incorrect. For example, if your answer is 308, **Example F** is the acceptable way to grid in your response. In **Example G**, there is a space between the 3 and the 8 rather than a 0—this is an unacceptable way to grid in your response and will be scored as incorrect.

EXAMPLE F
(Answer: 308)

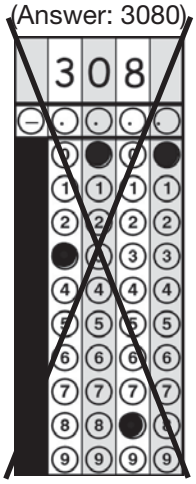


EXAMPLE G
(Answer: 38)



- Do not fill in a circle under an unused box, as in **Example H**. The answer recorded in Example H will be scored as 3,080 because the circle in the last column for 0 is filled in, even though the intended response is 308.

EXAMPLE H
(Answer: 3080)



Important Notes about Grid-Ins

- For your answer to be scored, the circles in the grid must be filled in.
- If you write an answer in the boxes but do not fill in the circles in the grid, your answer will be scored as incorrect.
- If your answer written in the boxes does not match how you have filled in the circles, your score will be based on how you have filled in the circles, like in Example H.
- If there is more than one circle filled in for a column, you answer will be scored as incorrect.
- A complete numerical response that is correct will be scored as correct, even if you accidentally begin recording in the wrong column.
- If you accidentally add a decimal point (with no additional values or zeros) after a whole number, your answer will be scored as that whole number. For example, if your answer is 5, as in Example A, an answer that is filled in as 5. or 5.0 will be considered an answer of 5 in scoring.

2.0 GET READY FOR TEST DAY

2.1 What to Bring to Your Testing Session

You MUST bring the following to the testing session:

- ✓ your SHSAT test ticket signed by you and your parent/guardian
- ✓ sharpened Number 2 pencils (you cannot use a pen)
- ✓ eraser
- ✓ Assistive Technology (if indicated on your IEP and test ticket)

You CAN, but are not required to bring:

- ✓ slant board
- ✓ pencil grip
- ✓ FM unit
- ✓ highlighter
- ✓ a watch that is silent and NOT a calculator
- ✓ a quiet, unwrapped snack (Students can have their snack before the beginning of the test administration; snacks are NOT allowed during testing time.)
- ✓ water (in a soft or plastic container that doesn't make noise if tipped)

2.2 What NOT to Bring

Not Permitted

- ✗ cameras
- ✗ calculators
- ✗ smart watches
- ✗ MP3 Player/iPod
- ✗ tablet/iPad, ebook reader
- ✗ smart phones, other cell phones, any other electronic device
- ✗ outside written materials
- ✗ soda, juice, or any other drinks beyond water; water is the only beverage allowed in the testing site

Note on Cell Phones

Cell phones are permitted in test site, but:

1. they must be turned off

2. you may not have them with you during the test—this means they may not be in your pocket, hand, or desk

The test site will instruct you on what to do with your cell phone before the test starts. You will be instructed to turn off and store cell phones, cameras, and other electronic devices according to the regulations set by the test site.

Will Be Provided

- ✓ test booklet
- ✓ answer sheet
- ✓ scrap paper, which is attached to the booklet and can be used to take notes for Math calculations and will be collected at the end of the test
- ✓ **ELLs ONLY** will receive a math bilingual glossary in one of the nine DOE languages : Arabic, Bangla-Bengali, Chinese, French, Haitian Creole, Korean, Russian, Spanish and Urdu.

2.3 Test Day Expectations

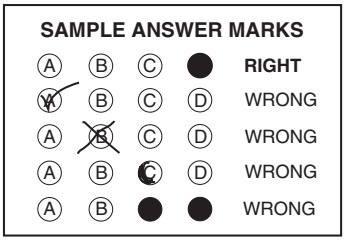
- Be sure to arrive at the test site at the time that is on your SHSAT test ticket. Please note that this is the arrival time, not the time that the test will start. The test will begin as soon as possible after the time on your ticket. In some cases, the test may begin an hour or more after the arrival time noted on the test ticket. Your testing site can provide you with estimated times when the test will end and students will be released.
- Before the test begins, our site staff will take a photograph or video of the students in each testing room. These images will be used for test security purposes only.
- All students taking the SHSAT must stay in testing rooms for the entire standard test administration time (180 minutes), with the exception of using the bathroom.
- Once the standard test administration time (180 minutes) is over, students with an accommodation of extended time may leave if they have finished working on the exam. Students who decide to leave after the first 180 minutes of the standard test administration time must sign out to indicate they understood they gave up their remaining available time on the SHSAT. Students with this accommodation will have a break at the conclusion of the 180 minutes, and then again after another 90 minutes have passed.

2.4 Filling In the Answer Sheet

Before taking the test, you will fill out important information on Side 1 of your answer sheet. First, you will be asked to read and sign a statement on your answer sheet stating that you are well enough to take the test, a resident of New York City, and are taking the test for the correct grade level.

- If you do not feel well, you should inform the test proctor immediately; you should not begin the test or sign the statement. Once you break the security seal and begin the test, you may not be able to request a make-up test due to illness.
- Be sure you are taking the test for the correct grade level.

When you are told to begin the test, mark your answers on the answer sheet by completely filling in the appropriate circle. Make sure your marks are heavy and dark. Be careful not to make any stray marks on the answer sheet. If you change an answer, completely erase your first answer. There is only one correct answer to each question. If your answer sheet shows more than one mark in response to a question, that question will be scored as incorrect.



You may write in your test booklet or on the scrap paper provided to work through ELA or Math questions, but your answers must be recorded on the answer sheet in order to be counted. It will not be possible to go back and mark your answers on the answer sheet after time is up. Information in the test booklet or on scrap paper will not be counted.

2.5 Student Misconduct

Test security is critical for the SHSAT. As such, the following rules are strictly enforced to ensure all students have a fair testing experience.

- During the test, you may not attempt to communicate with other students in any way. This includes, but is not limited to:
  - speaking, writing and passing notes
  - sharing test booklets or answer sheets
  - looking at other students' answers
  - recording test questions
  - possession of a cell phone, camera or other electronic device (even if it is powered off)
- At the end of the test, you will be told to stop and put your pencil down and will be given directions about your testing materials. Once your test administrator tells you to put your pencil down, you may not continue writing on any of your testing materials, which includes, but is not limited to:
  - darkening bubbles
  - circling bubbles
  - erasing responses
- Test questions and answers may not be shared with any individuals outside of the testing site.

Students found to be engaging in any of these activities will have their tests invalidated.

- Grade 8 students will not be allowed to take the test again until the following school year.
- Grade 9 students will not have any additional opportunities to take the test after Grade 9.

Any student who refuses to put away or turn in a prohibited device will not be allowed to take the test. Possession of prohibited items at any time during the test administration, even if powered off, will result in the test being invalidated. Students will not be provided with an opportunity to make up the exam on a subsequent day.

3.0 WHAT HAPPENS AFTER I TAKE THE SHSAT?

3.1 Claims of Testing Irregularities

The NYCDOE works hard to ensure that the SHSAT is administered in a fair and consistent manner to all students. If, however, you believe there is a disturbance or problem during any part of the SHSAT, bring the matter to the immediate attention of the proctor. This may include a misprinted test booklet, undue distraction, or improper student behavior. The proctor will attempt to remedy the situation and may take a written statement from you at the end of the test.

You and your parents/guardians may also report any suspected proctoring or testing irregularities in one of the following ways:

1) By submitting an electronic request to **HSEnrollment@schools.nyc.gov**, or

2) By sending a written request via certified mail with proof of delivery to:

Office of Student Enrollment
52 Chambers Street, Room 415
New York, NY 10007

All requests must be submitted no later than **one week** after your test administration date.

For all claims, please include parent/guardian and student names, as well as telephone and/or email contact information. Any claims of testing irregularity postmarked later than one week after the test date may not be considered. Claims will be responded to on an individual basis.

Additional Remedy: If you are unsatisfied with our response to your appeal, you may appeal the NYCDOE's decision to the Commissioner of the New York State Education Department as stated in New York Education Law 310. Learn how to pursue such an appeal on the Commissioner's website at counsel.nysed.gov/appeals.

GRADE 8

A

The New York City Department of Education

2022 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.

Line 3: Print your birth date with the number of the month first, then the number of the day, then the last two digits of the year. For example, a birth date of March 1, 2005, would be 3-1-05.

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

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

Grid 5:

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

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

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

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

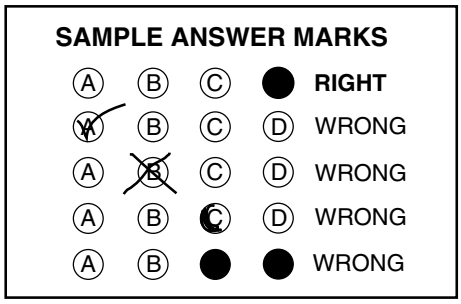
Now review Side 1 to make sure you have completed all lines and grids correctly. Review each column to see that the filled-in circles correspond to the letters or numbers in the boxes above them.

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

General Directions, continued

Marking Your Answers

Mark each of your answers on the answer sheet in the row of circles corresponding to the question number printed in the test booklet. Use only a Number 2 pencil. If you change an answer, be sure to erase it completely. Be careful to avoid making any stray pencil marks on your answer sheet. Each question has only one correct answer. If you mark more than one circle in any answer row, that question will be scored as incorrect.



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

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

Planning Your Time

You have 180 minutes to complete the entire test. **How you allot the time between the English Language Arts and Mathematics sections is up to you.** If you begin with the English Language Arts section, you may go on to the Mathematics section as soon as you are ready. Likewise, if you begin with the Mathematics section, you may go on to the English Language Arts section as soon as you are ready. If you complete the test before the allotted time (180 minutes) is over, you may go back to review questions in either section.

Be sure to read the directions for each section carefully. Each question has only one correct answer. Choose the best answer for each question. When you finish a question, go on to the next, until you have completed the last question. Your score is determined by the number of questions you answer correctly. **Answer every question, even if you may not be certain which answer is correct.** Don't spend too much time on a difficult question. Come back to it later if you have time. If time remains, you should check your answers.

Students must stay for the entire test session.

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

Pearson

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

A

1128928 1 2 3 4 5 A B C D E Printed in the USA ISD34457

Part 1 — English Language Arts

57 Questions

Revising/Editing

QUESTIONS 1-9 (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 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.

A. Insert a comma after ***agile***.

B. Insert a comma after ***first***.

C. Insert a comma after ***only***.

D. Insert a comma after ***States***.

2. Read this sentence.

> The engineers tried some other things in the hope of finding a more effective insulation for the compartment.

What is the most precise revision for the words ***The engineers tried some other things***?

E. The engineers did experiments with several new materials

F. The engineers tested foam and fiberglass

G. The engineers examined two new materials

H. The engineers worked with foam and fiberglass

3. 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

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

> (1) The blobfish, a creature that certainly resembles its name, is an unusual fish whose body is mostly composed of pink, gelatinous flesh. (2) Because it has very few muscles and its density is close to that of water, the blobfish spends its life floating slightly above the ocean floor. (3) It must wait patiently for whatever edible matter might float by its mouth. (4) The blobfish's downturned mouth, slimy skin, and pale coloring caused them to be voted the World's Ugliest Animal in 2013.

E. sentence 1

F. sentence 2

G. sentence 3

H. sentence 4

REVISING/EDITING PART B

DIRECTIONS: Read the text below and answer the questions following it. You will be asked to improve the writing quality of the text and to correct errors so that the text follows the conventions of standard written English. You should reread relevant parts of the 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.

5. What is the best way to combine sentences 3 through 5 to clarify the relationship between ideas?

A. People who code have to learn this language because they can construct programs that will perform detailed and complex tasks.

B. People who code have to learn this language so they can construct programs that will perform detailed or complex tasks.

C. When people who code have to learn this language, it is so they can construct programs that will perform detailed and complex tasks.

D. If people who code have to learn this language, then they can construct programs that will perform detailed as well as complex tasks.

6. Which sentence should follow sentence 5 to best state the main claim in the passage?

E. People should take advantage of opportunities to study and learn basic coding because of its many valuable benefits.

F. People should attempt to understand how code can be used to design programs that are beneficial for a variety of industries and businesses.

G. Schools should offer coding classes because knowing how to code will help students succeed in many types of businesses.

H. Students should prepare for the future job market by studying code and learning how to code programs.

7. Which revision of sentence 10 provides the best transition to the argument in the third paragraph (sentences 10–13)?

A. Learning a coding language may be difficult, but coding skills are becoming important in many occupational fields.

B. Learning a coding language is useful because coding skills are becoming important in many occupational fields.

C. Employers in most industries realize that people with coding skills can demand higher salaries in many occupational fields.

D. Even though programming is its own unique field, coding skills are becoming important in many occupational fields.

8. Which sentence would best follow sentence 13 and support the ideas in the third paragraph (sentences 10–13)?

E. Experienced programmers, software engineers, and system administrators at large companies can earn well over $100,000 a year.

F. Hospitals, physicians' offices, and pharmaceutical companies are frequently looking to hire people who code to help with a variety of tasks.

G. Many companies are eager to hire employees who have experience in a specific industry as well as knowledge of basic coding.

H. 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.

9. Which concluding sentence would best follow sentence 20 and support the argument presented in the passage?

A. People should understand that knowing how to code is becoming an essential requirement for most high-paying jobs.

B. By understanding basic coding concepts, people can participate in an increasingly digital job market.

C. Students who want to secure a high-paying job in the technology industry should become proficient in coding.

D. Since coding is a valuable marketplace skill, today's students should begin to write their own computer programs.

Reading Comprehension

Questions 10–57

DIRECTIONS: Read each of the following six texts, and answer the related questions. You may write in your test booklet as needed to take notes. You should 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 ►

The Best Laid Plans of Ravens

1 In Edgar Allan Poe's poem "The Raven," a raven visits a lonely man's home and responds to the man's pleading questions with only the word "nevermore." The poem's narrator interprets the word as a prediction of doom for his future. A talking, prophetic raven may seem to be the wild imaginings of the poet, but a new study published in the journal *Science* hints that one particular idea behind the poem might not be as far-fetched as it seems. For most of human history, people assumed that animals do not understand the passage of time in the same way people do. Some people believed that animals might remember events from the past and that instinct might drive them to make preparations in order to guarantee survival, but most people did not think that animals had the ability to plan. At Lund University in Sweden, researchers argue that ravens may be able to think ahead and even plan for the future.

2 It can be difficult to test an animal's ability to plan because human observers must be certain they are not mistaking instinctual behavior for intentional planning. For example, many animals hoard food so that they will not run out later, but scientists who study animals would not call hoarding a decision to plan for the future. This action is merely instinctual. Cognitive scientists argue that in order for an animal's behavior to qualify as preparing for the future, the animal must use specific decision-making skills to solve a problem.

3 To avoid mistaking instinctual behavior for evidence of decision-making, the Lund University researchers designed two experiments to test ravens' ability to plan. Ravens belong to the corvid family, a group of birds known for their intelligence. A study in 2007 showed that corvids have the tendency to save only certain types of food, which suggests that they are planning for the future rather than acting on instinct. In order to investigate that theory, the researchers had to design experiments that would achieve results that could not be explained by an instinctual behavior of food hoarding. Therefore, the ravens were taught two behaviors that they do not normally perform in the wild.

4 For the first experiment, the researchers showed the birds how to use a small stone to open a box and get treats. Once the ravens learned the behavior, the researchers presented the birds with four stones. Only one stone was the right size to open the box. The birds learned to select that stone and set it aside until the researchers presented the box. The second experiment involved bartering. A researcher would trade the ravens a large treat for a bottle cap. Later, the researchers presented the ravens with a group of items, including small treats and the bottle cap. The ravens chose the bottle cap over the treats and waited for the original researcher to trade with them again so that they could get more treats. In both experiments, the ravens waited patiently for up to seventeen hours for the researcher to return.

5 The results of these experiments are exciting, but more evidence needs to be gathered before scientists can fully conclude that ravens can plan for the future. Some scientists argue that the ravens might be choosing the stone and bottle cap because the ravens have been trained to do so, not necessarily because the ravens are thinking ahead. Regardless, like other recent advances in animal science, these experiments show that ravens could be much smarter than first believed, and scientists now believe that ravens do actually think about their own future.

10. How does paragraph 1 introduce the ideas that ravens may perceive time and plan for the future?

E. It mentions a poem that considers whether a raven can see the future and then discusses why people have traditionally doubted that ravens have the ability to plan.

F. It references a poem about a raven that seems to have insight into the future and then mentions new information that suggests ravens have the ability to plan.

G. It mentions a poem that led people to believe that ravens are aware of the future and then explains that this belief prompted scientists to study ravens' ability to plan.

H. It references a poem about a raven that predicts the future and then describes the importance of differentiating ravens' instincts from their ability to plan.

11. Read this sentence from paragraph 1.

> **At Lund University in Sweden, researchers argue that ravens may be able to think ahead and even plan for the future.**

Which sentence from paragraph 4 provides support for this argument?

A. "Once the ravens learned the behavior, the researchers presented the birds with four stones."

B. "A researcher would trade the ravens a large treat for a bottle cap."

C. "Later, the researchers presented the ravens with a group of items, including small treats and the bottle cap."

D. "The ravens chose the bottle cap over the treats and waited for the original researcher to trade with them again so that they could get more treats."

12. Read these sentences from paragraph 2.

> **For example, many animals hoard food so that they will not run out later, but scientists who study animals would not call hoarding a decision to plan for the future. This action is merely instinctual.**

Which statement describes the effect of the phrase "merely instinctual" in the passage?

E. It implies that animals are skilled at finding and saving food for later consumption.

F. It conveys that many animals will usually prioritize gathering food over other activities.

G. It suggests that animals often store more food than they will be able to consume.

H. It emphasizes that many animals collect food automatically rather than with true intention.

13. In the first experiment described in paragraph 4, which of the ravens' behaviors provides the strongest evidence for the claim that the birds are capable of planning?

A. They accepted treats from the box.

B. They set aside the stone that would open the box.

C. They learned which stone could open the box.

D. They waited for researchers to bring the box.

14. Read this sentence from paragraph 4.

> **In both experiments, the ravens waited patiently for up to seventeen hours for the researcher to return.**

How does this sentence fit into the overall structure of the passage and contribute to the development of ideas?

E. It concludes the description of the experiments, supporting the idea that ravens can make decisions for the future.

F. It establishes the timeline required in experiments designed to determine learned behaviors in ravens.

G. It reveals how the ravens solved the problems posed in the experiments, proving that ravens have the ability to plan ahead.

H. It indicates that hoarding food is both an instinctual and a learned behavior among ravens.

15. How does paragraph 5 fit into the overall structure of the passage and contribute to the development of ideas?

A. It introduces a problem with the results of the study at Lund University, suggesting that some scientists believe that further research will not lead to a clear answer.

B. It summarizes the final steps of the study at Lund University, emphasizing the difficulties researchers had in differentiating between true planning and practiced actions.

C. It provides a conclusion to the information about the Lund University study, indicating that some scientists think further research is needed in order to prove the idea.

D. It lists the effects of the study at Lund University, implying that researchers should have designed experiments that better differentiated between planning and instinct.

16. The author conveys a point of view on the study of animal intelligence mainly by

E. sharing details about experiments that tested the ability of an animal to plan for the future.

F. comparing the results of different experiments that were designed to test animal intelligence.

G. critiquing experiments that aimed to demonstrate that certain animals are capable of planning for the future.

H. explaining how modern experiments show that previously held beliefs about animal intelligence are inaccurate.

17. With which statement would the author of the passage most likely agree?

A. Scientists are unlikely to be able to conduct an experiment that can genuinely distinguish between instinctual and learned behaviors in animals.

B. Scientists should continue researching to determine whether or not animals can demonstrate advanced intelligence.

C. Scientists should be careful about making conclusions about animal intelligence based on experiments that rely on training animals.

D. Scientists can confirm data on whether animals have the ability to plan by performing experiments on additional species known for their intelligence.

Ellen, the narrator, is preparing to leave her parents and the family farm for college the next day.

Excerpt from *Winter Wheat*

by Mildred Walker

1 I love Dad's way of talking that makes him seem different from other ranchers. He's lived here twenty-three years, but he still says "back East where I come from." He's the one who gets excited when I do about spring coming or a serial[1] running in the magazine we're both reading, but it's what Mom says that I depend on. When Mom used to say "Don't worry" about my pet chicken or dog or new calf, it always got well. Dad is always talking of going some place, not now, but next year, maybe. Mom seems to think of nothing farther away than today or perhaps yesterday or tomorrow morning.

2 Mom folded the ironing board and put it inside their bedroom that was just off the kitchen. She carried in the freshly ironed clothes. Dad went back to his paper. When Mom came back she took beans from the cupboard to soak for tomorrow. Dad always said Mom could make all the dishes he'd had back in Vermont as well as though she were a New Englander herself, instead of a Russian. All of a sudden, I realized that tomorrow when those beans would be ready to eat I'd be going away. It gave me a funny feeling.

3 "I'll be taking the train tomorrow night," I said aloud, more to hear it myself.

4 "We can drive you into town in the afternoon," Dad said, dropping his paper on the floor.

5 "There's no need to go to town; she can catch the train at Gotham just as well. We haven't nothing to take us into town for," Mom said.

6 "Well, we don't have to decide tonight," Dad said, but I knew he wanted to go into Clark City. It wouldn't be so flat as just seeing me go off on the train from Gotham. My going away was hard on both of them; they were so different—and I was part of them both. It made me uncomfortable to think of leaving them.

7 While I was getting ready for bed in my room that's off the front room, I saw how it would be if I left from town. We'd go in right after dinner and go around to the stores, Dad going one way and Mom and I another. Dad would probably have his hair cut at the barbershop and stop in the bank and meet someone he knew to talk to. Then we'd meet at the big store on the corner and go to the cafeteria for supper. The train stops ten minutes or so at the station in town and there are other people and excitement and you have time to wave from the platform and then again from your window by your seat. We went to the station in Clark City to see the Goodals off when they went back to Iowa.

8 If I left from Gotham, we'd just drive down in the truck and wait till the train came. It only stops long enough for you to get on and you hardly have time to taste the flavor of going away.

---

[1]**serial:** story published in short segments at regular intervals

9 I sat on the bed in my pyjamas with my arms around my knees. I couldn't keep from thinking of that time Dad went back East. I tried to, and then I just sat still and looked straight at it. Sometimes that's better than working so hard to keep from looking at what's in your mind.

10 Dad went all the way back to Vermont. . . . It was in November and it was already dark when the train came through Gotham. Even now, I could feel how cold and dark it was. I held Mom's hand. Dad was so dressed-up he seemed strange. . . . We stood there without saying anything until Dad told Mom to remember to call Mr. Bardich, our neighbor, if the cow didn't calve tomorrow.

11 "I'll manage," Mom snapped back.

12 "I wish you could go, Anna," Dad said to Mom, "and we could take Ellen." . . .

13 "Good-by, Anna Petrovna," he said, looking at Mom. I had never heard him call her by two names before.

14 "Good-by," Mom said, standing still, without smiling.

15 Then he was gone and the crossroads were darker than ever. The train light shone on the high window in the top of the grain elevator for a moment and then that too was dark. We got into our old Ford and Mom drove back to the house. My throat ached all the way. The name Dad had called Mom kept saying itself in my ears: "Anna Petrovna, Anna Petrovna." . . .

16 Our house seemed lonely when we came back to it. It seemed to be hiding under the coulee.[2] I went with Mom to put the truck in the barn that was bigger than the house. I think Mom was prouder of our barn than the house, anyway. We walked back to look at the cow that was going to calve. She was just a big light blob in the dark, waiting. I had thought she was exciting this morning, but now she seemed sad, too.

17 The wind blew when we walked across the open space to the house and I couldn't help shivering with the cold. Inside the house it was warm, but empty.

18 "Bring your nightgown in here and I heat you some milk," Mom said.

19 I drank the milk sitting on a stool in front of the stove. It tasted good, but the lonely ache in my throat was still there. I picked up my clothes and hung them neatly behind the stove and put my cup on the sink board. Mom was fixing oatmeal for tomorrow morning.

20 "Good night, Mom," I said almost timidly, standing beside her. She seemed wrapped around in a kind of strangeness. Then she turned around and drew me to her. The front of her dress was warm from the stove. I felt the comfortable heat through my gown. She laid her hand against my face and it felt rough and hard but firm. I dared ask her something I wanted to know.

21 "Mom, was that really your name—what Dad called you?"

22 Her voice sounded surprised. "Why, Yeléna, you know that; Anna Petrovna. You know I am born in Russia, in Seletskoe."

---

[2]**coulee:** small gulch or ravine

23 "Yes, but I didn't know your other name," I said.

24 "Anna Petrovna Webb." She pronounced it slowly. "Once I think what a funny name Ben Webb is!" She laughed. Her laugh was warm and low like our kitchen, and comfortable. The house seemed natural and right again. . . .

25 But now that I am grown, I feel the wall of strangeness between them, more than when I was a child. I wondered how they would get along without me.

From WINTER WHEAT by Mildred Walker, published by University of Nebraska Press. Copyright © 1944 by Harcourt, Brace and Company, Inc. Copyright renewed 1971 by Mildred Walker. All rights reserved.

18. Read these sentences from paragraph 2.

> **Dad always said Mom could make all the dishes he'd had back in Vermont as well as though she were a New Englander herself, instead of a Russian. All of a sudden, I realized that tomorrow when those beans would be ready to eat I'd be going away. It gave me a funny feeling.**

The sentences help develop a theme of the excerpt by

E. suggesting that life presents people with many challenges.

F. implying that the stress of major life events can cause confusion.

G. demonstrating that moving on from the familiar is a common human experience.

H. emphasizing the idea that people can easily learn the routines of being part of a new culture.

19. Read this sentence from paragraph 3.

> **"I'll be taking the train tomorrow night," I said aloud, more to hear it myself.**

This remark contributes to the conflict in the excerpt by

A. revealing Dad's reasons for wanting to drive to the city.

B. causing tension between Mom and Dad.

C. leading Ellen to distance herself from both Mom and Dad.

D. showing Mom's reluctance to plan that far in advance.

20. Read this sentence from paragraph 9.

I tried to, and then I just sat still and looked straight at it.

How does the phrase "looked straight at it" contribute to the meaning of the excerpt?

E. It shows that Ellen is willing to deal with a problem directly instead of ignoring it.

F. It suggests that Ellen studies all parts of an issue and not just its surface.

G. It illustrates that Ellen examines both sides of an argument.

H. It implies that Ellen is eager to seek wisdom from past experiences.

21. The words "cold" and "dark" affect the tone in paragraph 10 by

A. highlighting the feeling of unpredictability among the family members.

B. showing the feelings of anger and resentment Ellen directs toward her parents.

C. exaggerating the feeling of regret Dad experiences when leaving his family.

D. emphasizing the feelings of separation and loss that Ellen feels.

22. Which sentence from the excerpt provides evidence that Ellen has a lot in common with her father?

E. "He's the one who gets excited when I do about spring coming or a serial running in the magazine we're both reading. . . ." (paragraph 1)

F. " 'We can drive you into town in the afternoon,' Dad said, dropping his paper on the floor." (paragraph 4)

G. " 'Well, we don't have to decide tonight,' Dad said, but I knew he wanted to go into Clark City." (paragraph 6)

H. "I wondered how they would get along without me." (paragraph 25)

23. Read these sentences from the excerpt.

> **Mom seems to think of nothing farther away than today or perhaps yesterday or tomorrow morning.** (paragraph 1)
>
> **Mom was fixing oatmeal for tomorrow morning.** (paragraph 19)

The sentences help develop a central idea of the excerpt by

A. suggesting that practical people focus on current needs rather than worrying about the future.

B. showing that parents tend to consider the needs of their children before thinking of themselves.

C. revealing that it is sometimes important to plan ahead.

D. illustrating that dreaming about the future is a waste of time.

24. The flashback in paragraphs 10–24 affects the plot by

E. showing that the departure of one member of the family makes extra work for those left on the farm.

F. showing that the bond within the family persists even when its members are apart.

G. explaining why Ellen fears that leaving her parents will be too difficult.

H. illustrating the close connection Ellen has with both of her parents.

25. Which sentence from the excerpt provides evidence that Mom wants Ellen to understand the family's heritage?

A. "Mom folded the ironing board and put it inside their bedroom that was just off the kitchen." (paragraph 2)

B. " 'There's no need to go to town; she can catch the train at Gotham just as well.' " (paragraph 5)

C. "We'd go in right after dinner and go around to the stores, Dad going one way and Mom and I another." (paragraph 7)

D. " 'Why, Yeléna, you know that; Anna Petrovna.' " (paragraph 22)

CONTINUE TO THE NEXT PAGE ►

Massachusetts: Lowell National Historical Park

1 During the first half of the 19th century, Lowell, Massachusetts, quickly transformed itself from a farm town to a bustling industrial city. In time, Lowell became a model of industry, gaining global recognition for its state-of-the-art technology, innovative canal and dam system, mill architecture, boardinghouses, churches, and ethnic neighborhoods. Young Yankee[1] women, immigrant families, and European tourists all flocked to Lowell to find work at one of the many textile mills, or visit the industrious city that was becoming a popular tourist destination. As one Scottish traveler observed during his visit to America, "Niagara[2] and Lowell are the two objects I will longest remember in my American journey, the one the glory of American scenery, the other of American industry." Today, Lowell National Historical Park welcomes visitors to enjoy the sights of Lowell and learn about the history of one of America's most significant industrial cities.

2 The Boston merchants who founded Lowell in 1821 and named it after Francis Cabot Lowell chose to locate the town along Massachusetts's Merrimack River to take advantage of the kinetic energy offered by the Pawtucket waterfalls. Over six miles of canals powered the waterwheels of Lowell's mills, whose massive five- and six-story brick buildings dominated the city's landscape. . . . The most recognized of these buildings are the Lowell Manufacturing Company chartered in 1821, the Suffolk or Wannalancit Mill completed around the 1880s, the Boott Mill Company established in 1835, and the Boott Mill Boardinghouse that opened in 1838. By the 1850s, 40 textile mills employing over 10,000 workers stretched for about a mile along the river. . . .

3 The city's female workforce was significant in the history of Lowell. From the early to mid-1800s, women left the constricted lifestyle of small rural towns and rural areas for independent industrial city life. Most were young single Yankee girls, who were tired of the limited opportunities offered by their domestic work.[3] Women found that Lowell's mills offered monthly wages for their services and provided them room and board. Although these women gained economic independence in Lowell, the mill boardinghouse keepers constantly supervised their social activities, for which they hardly had any time, considering their daily 12- to 14-hour work schedules. At the end of the day, the factory bell signaled the "mill girls" to return to their boardinghouses. They were expected to adhere to the strict code of conduct respecting curfew and attending church.

4 Yankee "mill girls" continued to dominate the Lowell workforce until the 1840s, when the city began to find it difficult to compete with the growing industrial development in other New England communities. As profits fell, the mill industry cut wages. These wage cuts, deteriorating working conditions, and long workdays led the "mill girls" to protest and organize strikes. When their demands went unheard, the women left Lowell, and immigrant groups replaced them in the workforce. Despite the low wages and unhealthy work conditions, immigrants were eager to find work.

5 The immigrants replacing the Yankee "mill girls" during the 1840s were predominantly Irish Catholics, who traveled to America during the Great Potato Famine. Although Lowell received an influx of Irish families during this time, the Irish were a part of the city's history from its birth,

---

[1]**Yankee:** native to New England

[2]**Niagara:** a town in northwestern New York State well known as the location of Niagara Falls, a series of waterfalls on the Canadian border

[3]**domestic work:** household duties like cooking and cleaning

and before the "mill girls" arrived, they built Lowell's historic canals, mills, and boardinghouses. Initially, Lowell's Protestant community was slow to welcome Irish immigrants, but the hostility between Yankee Protestants and Irish Catholics eventually disappeared. Irish immigrants dominated the industrial scene until the Civil War, when other immigrant groups began to work in the city mills.

6 Like the Irish, the French-Canadians, Greeks, Poles, Portuguese, Russian Jews, and Armenians who came to work in Lowell's mills faced long work hours, low wages, and poor living conditions in the city's crowded tenements. By the time Lowell's industry declined, the city had become an ethnic melting pot, where each group claimed its own distinct neighborhood, like the Irish immigrants' "New Dublin" or "Acre," and the French-Canadians' "Little Canada." The city officially began to close down its mills in the 1920s and '30s after Lowell's outdated mills could no longer compete against the state-of-the-art cotton mills in other communities and working conditions continued to decline as Lowell's companies stopped reinvesting in their mills. . . . Despite a brief resurgence during World War II, the city shut down its last surviving mill by the mid-1950s.

From "Massachusetts: Lowell National Historical Park"—Public Domain/National Park Service

26. Read this sentence from paragraph 1.

> **As one Scottish traveler observed during his visit to America, "Niagara and Lowell are the two objects I will longest remember in my American journey, the one the glory of American scenery, the other of American industry."**

The author most likely includes the quotation from the Scottish traveler in order to

E. suggest that people around the world saw the direct contribution of nature and industry to the United States.

F. compare the natural and industrial attractions in the United States at that time.

G. convey the idea that the United States offered both natural and industrial attractions.

H. imply that the natural resources in the United States contributed to the development of industry.

27. A central idea that Lowell was "one of America's most significant industrial cities" (paragraph 1) is conveyed in the passage primarily through a description of the

A. canals, mills, and boardinghouses that were built by immigrants.

B. mill girls and immigrants who comprised Lowell's workforce.

C. development of the mills and the workforce established to support them.

D. cultural diversity of the people who lived in the area.

28. Which sentence from paragraph 2 best supports the idea that Lowell became "a bustling industrial city" (paragraph 1) in a short period of time?

E. "The Boston merchants who founded Lowell in 1821 and named it after Francis Cabot Lowell chose to locate the town along Massachusetts's Merrimack River to take advantage of the kinetic energy offered by the Pawtucket waterfalls."

F. "Over six miles of canals powered the waterwheels of Lowell's mills, whose massive five- and six-story brick buildings dominated the city's landscape."

G. "The most recognized of these buildings are the Lowell Manufacturing Company chartered in 1821, the Suffolk or Wannalancit Mill completed around the 1880s, the Boott Mill Company established in 1835, and the Boott Mill Boardinghouse that opened in 1838."

H. "By the 1850s, 40 textile mills employing over 10,000 workers stretched for about a mile along the river."

29. Read this sentence from paragraph 3.

> **From the early to mid-1800s, women left the constricted lifestyle of small rural towns and rural areas for independent industrial city life.**

Which statement best describes how the sentence fits into the overall structure of the passage?

A. It provides a transition from a description of the mills to a description of the workforce in those mills.

B. It indicates a shift in tone from positive and hopeful to negative and dissatisfied with working conditions at the mill.

C. It summarizes a challenge that led many women to leave their hometown and seek work in urban areas.

D. It begins a comparison of the mill workforce between the mid-1800s and the late 1800s.

30. Read this sentence from paragraph 5.

> **Although Lowell received an influx of Irish families during this time, the Irish were a part of the city's history from its birth, and before the "mill girls" arrived, they built Lowell's historic canals, mills, and boardinghouses.**

How does this sentence contribute to the development of ideas in the passage?

E. It implies that Lowell was founded by early Irish immigrants.

F. It emphasizes the important role Irish immigrants played in Lowell's history.

G. It suggests that the new Irish immigrants were readily accepted into the community.

H. It highlights the working relationship between the mill girls and the new Irish immigrants.

31. Which sentence best summarizes the mill girls' experience as the dominant workforce in Lowell?

A. The mill girls were eager to leave their domestic duties and small towns behind, so they went to work in the mills of Lowell.

B. Originally, the mill girls were satisfied to work in Lowell, but as they left their jobs at the Lowell mills, immigrants arrived to fill the empty positions.

C. Young women left home to work in the Lowell mills, but the mill girls soon became dissatisfied with the working conditions and rigid boardinghouse rules.

D. The mill girls embraced city life when they came to work in Lowell's mills, but when their protests about unfavorable working conditions went unanswered, they left.

32. The reason Lowell lost its status as an industrial leader is best illustrated through the

E. description of poor living and working conditions.

F. explanation for why some immigrant groups struggled to live together.

G. comparison with other mills that used modern methods.

H. information about the mills opening temporarily during World War II.

Ode to Fireworks

In autumn my mother drove us to the edge of the field
where the fair was set up year after year:
the carousel, the bumper cars, the long, low sheds
filled with prizewinning animals.
We—my sister, my cousin, and I—were ready for bed,
already in our pajamas. This was a treat we waited
all year for. We waited in the darkness
for the first low, dull *thwumps*, like someone
beating an old, filthy rug hung on a wash line.
Then we counted the seconds between the lightning
and thunder, as we also used to do, until the sky
lit up: red, blue, green, gold. In my mind's eye
I can still see the straggly, ancient oak whose branches
reached up past the exhibition halls, silhouetted
against the spectrum of stars that cascaded behind it.

It was one thing to look up into the sky
and imagine yourself in it or to make out pictures
among the clouds, which my sister liked to do.
No, I would tell her, that cloud
does *not* look like an elephant, a hat, an umbrella.
But it was another thing to see
the sky at night written upon
with those jewels. (We lived in the country:
night was *night*.) All around us, crickets
stridulated in the stubble of what had been
somebody's cornfield, their song rising and falling.
You could smell winter on the air's edge.

Now, in the city, when the sky dips into shadow
at New Year's or on the Fourth of July, I find myself
craning my neck upward at odd moments.
The city sky is always lit up. This is where we live now,
and it is how we live now, awash in light
of every hue. Everything is a constant celebration:
picking up washing at the cleaner's or stopping by
the corner market for a loaf of heavy bread.
And the music around me is the music of people,
their voices rising and falling in a hundred languages.
But beneath the yellowish glow deep in the sky
of all our city lights pelting out into the universe,
I remember the feel of the pickup truck bumping
across the ridged field, as I kept waiting for those
childhood bursts, watching as they escorted us home.

33. The comparison in lines 8–9 of the poem is used to convey

A. the muffled pounding of explosions in the distance.

B. the way lightning streaks through the clouds.

C. the echoes of thunder on an autumn night.

D. the glow of sparks falling from the sky.

34. Read lines 22–23 from the poem.

> **the sky at night written upon**
> **with those jewels.**

What does the word choice in these lines convey about the speaker?

E. The speaker values material possessions.

F. The speaker imagines that the fireworks are magical.

G. The speaker believes that the country setting is distinctive.

H. The speaker cherishes the memory of seeing fireworks as a child.

35. The use of italics on the word "*night*" in line 24 is most likely intended to emphasize the

A. sense of mystery in the darkness.

B. sense of absolute darkness.

C. speaker's fear of night.

D. speaker's certainty about that night.

36. What is the purpose of the repeated words "rising and falling" in lines 26 and 37?

E. to create a distinction between solitude and meaningful interaction

F. to demonstrate a connection between the speaker's past and present

G. to emphasize the speaker's attention to the surrounding sounds

H. to compare the fireworks to common sights and sounds

37. What impact does the phrase "Everything is a constant celebration" (line 33) have in the poem?

A. It reveals that the speaker finds the city more pleasurable than the country.

B. It suggests that the persistent brightness of the city can be overwhelming to the speaker.

C. It implies that what is normal in the city was unusual in the country.

D. It emphasizes the hectic pace of daily life in the city.

38. Read lines 41–42 from the poem.

> **I kept waiting for those**
> **childhood bursts, watching as they escorted us home.**

How does this memory affect the speaker?

E. The speaker believes it is impossible to ever return to a place in the past.

F. The speaker is still amused by the impatience felt during fireworks displays.

G. The speaker now regrets abandoning the rural way of life.

H. The speaker feels a sense of comfort when reflecting on the past.

39. The fireworks in the poem represent the speaker's

A. wish to return to a simpler way of living.

B. bittersweet feelings about leaving the past behind.

C. high expectations for everyday life.

D. reflections on past interactions with relatives.

CONTINUE TO THE NEXT PAGE ►

Excerpt from *In Search of the Unknown*

by Robert W. Chambers

1 It was at that time the policy of the trustees and officers of the Zoological Gardens neither to employ collectors nor to send out expeditions in search of specimens. The society decided to depend upon voluntary contributions, and I was always busy, part of the day, in dictating answers to correspondents who wrote offering their services as hunters of big game, collectors of all sorts of fauna, trappers, snarers, and also to those who offered specimens for sale, usually at exorbitant rates.

2 To the proprietors of . . . mangy lynxes, moth-eaten coyotes, and dancing bears I returned courteous but uncompromising refusals—of course, first submitting all such letters, together with my replies, to Professor Farrago.

3 One day towards the end of May, however, just as I was leaving Bronx Park to return to town, Professor Lesard, of the reptilian department, called out to me that Professor Farrago wanted to see me a moment; so I . . . retraced my steps to the temporary, wooden building occupied by Professor Farrago, general superintendent of the Zoological Gardens. The professor, who was sitting at his desk before a pile of letters and replies submitted for approval by me, pushed his glasses down and looked over them at me with a whimsical smile that suggested amusement, impatience, annoyance, and perhaps a faint trace of apology.

4 "Now, here's a letter," he said, with a deliberate gesture towards a sheet of paper impaled on a file—"a letter that I suppose you remember." He disengaged the sheet of paper and handed it to me.

5 "Oh yes," I replied, with a shrug; "of course the man is mistaken—or—"

6 "Or what?" demanded Professor Farrago, tranquilly, wiping his glasses.

7 "—Or a liar," I replied.

8 After a silence he leaned back in his chair and bade me read the letter to him again, and I did so with a contemptuous tolerance for the writer, who must have been either a very innocent victim or a very stupid swindler. I said as much to Professor Farrago, but, to my surprise, he appeared to waver.

9 "I suppose," he said, with his near-sighted, embarrassed smile, "that nine hundred and ninety-nine men in a thousand would throw that letter aside and condemn the writer as a liar or a fool?"

10 "In my opinion," said I, "he's one or the other."

11 "He isn't—in mine," said the professor, placidly.

12 "What!" I exclaimed. "Here is a man living all alone on a strip of rock and sand between the wilderness and the sea, who wants you to send somebody to take charge of a bird that doesn't exist!"

FORM A

CONTINUE ON TO THE NEXT PAGE ▶

13 "How do you know," asked Professor Farrago, "that the bird in question does not exist?"

14 "It is generally accepted," I replied, sarcastically, "that the great auk has been extinct for years. Therefore I may be pardoned for doubting that our correspondent possesses a pair of them alive."

15 "Oh, you young fellows," said the professor, smiling wearily, "you embark on a theory for destinations that don't exist."

16 He leaned back in his chair, his amused eyes searching space for the imagery that made him smile.

17 "Like swimming squirrels, you navigate with the help of Heaven and a stiff breeze, but you never land where you hope to—do you?"

18 Rather red in the face, I said: "Don't you believe the great auk to be extinct?"

19 "Audubon[1] saw the great auk."

20 "Who has seen a single specimen since?"

21 "Nobody—except our correspondent here," he replied, laughing.

22 I laughed, too, considering the interview at an end, but the professor went on, coolly:

23 "Whatever it is that our correspondent has—and I am daring to believe that it *is* the great auk itself—I want you to secure it for the society."

24 When my astonishment subsided my first conscious sentiment was one of pity. Clearly, Professor Farrago was on the verge of dotage[2]—ah, what a loss to the world!

25 I believe now that Professor Farrago perfectly interpreted my thoughts, but he betrayed neither resentment nor impatience. I drew a chair up beside his desk—there was nothing to do but to obey, and this fool's errand was none of my conceiving.

26 Together we made out a list of articles necessary for me and itemized the expenses I might incur, and I set a date for my return, allowing no margin for a successful termination to the expedition.

27 "Never mind that," said the professor. "What I want you to do is to get those birds here safely. Now, how many men will you take?"

28 "None," I replied, bluntly; "it's a useless expense, unless there is something to bring back. If there is I'll wire you, you may be sure."

29 "Very well," said Professor Farrago, good-humoredly, "you shall have all the assistance you may require. Can you leave to-night?"

---

[1]**Audubon:** John James Audubon, an ornithologist and artist who created scientific illustrations of birds

[2]**dotage:** a loss of reasoning brought about by old age

30 The old gentleman was certainly prompt. I nodded, half-sulkily, aware of his amusement.

31 "So," I said, picking up my hat, "I am to start north to find a place called Black Harbor, where there is a man named Halyard who possesses, among other household utensils, two extinct great auks—"

32 We were both laughing by this time. I asked him why on earth he credited the assertion of a man he had never before heard of.

33 "I suppose," he replied, with the same half-apologetic, half-humorous smile, "it is instinct. I feel, somehow, that this man Halyard *has* got an auk—perhaps two. I can't get away from the idea that we are on the eve of acquiring the rarest of living creatures. It's odd for a scientist to talk as I do; doubtless you're shocked—admit it, now!"

34 But I was not shocked; on the contrary, I was conscious that the same strange hope that Professor Farrago cherished was beginning, in spite of me, to stir my pulses, too.

35 "If he has—" I began, then stopped.

36 The professor and I looked hard at each other in silence.

37 "Go on," he said, encouragingly.

38 But I had nothing more to say, for the prospect of beholding with my own eyes a living specimen of the great auk produced a series of conflicting emotions within me which rendered speech profanely superfluous.

From IN SEARCH OF THE UNKNOWN by Robert W. Chambers—Public Domain

40. Read paragraph 2 from the excerpt.

> **To the proprietors of . . . mangy lynxes, moth-eaten coyotes, and dancing bears I returned courteous but uncompromising refusals—of course, first submitting all such letters, together with my replies, to Professor Farrago.**

This paragraph helps develop the plot by establishing that the narrator

E. dislikes writing refusal letters for the animals offered to the zoological society.

F. attempts to predict what the professor would say in the refusal letters.

G. believes that many of the animals offered are not acceptable for the zoological society.

H. resents the professor's insistence on reviewing the refusal letters.

41. Read this sentence from paragraph 3.

> **The professor, who was sitting at his desk before a pile of letters and replies submitted for approval by me, pushed his glasses down and looked over them at me with a whimsical smile that suggested amusement, impatience, annoyance, and perhaps a faint trace of apology.**

What does the phrase "a faint trace of apology" convey about the professor?

A. It indicates that the professor feels bad that he has to call the narrator to his office after work.

B. It shows that the professor is hesitant to share his opinions with the narrator.

C. It implies that the professor is uncomfortable criticizing the narrator's work.

D. It suggests that the professor knows that the conversation will be frustrating for the narrator.

42. How does the exchange between the professor and the narrator in paragraphs 8–11 contribute to the development of the characters?

E. It establishes the conflict between the professor and the narrator concerning the validity of the letter.

F. It suggests a theme of collaboration because the narrator and the professor regularly work together.

G. It reveals the characters' traits by contrasting the narrator's distrust with how easily the professor is deceived by what he reads.

H. It hints that the resolution will involve the narrator accepting the professor's opinion about the content of the letter.

43. The professor's observations in paragraphs 15–17 create tension in the excerpt by causing the narrator to feel

A. flustered by the professor's criticism of his logic.

B. annoyed by the professor's sarcasm about his inexperience.

C. confused by the professor's lack of respect for his opinion.

D. frustrated by the professor's lack of interest in his theory.

44. How does the interaction between the narrator and the professor in paragraphs 26–28 contribute to the development of the theme?

E. It illustrates the professor's patience as the narrator argues against making the expedition.

F. It reveals the narrator's frustration with his limited role in making decisions for the zoological society.

G. It emphasizes the professor's desire to acquire new specimens for the zoological society at any cost.

H. It shows the narrator's acceptance of his assignment despite his personal objections.

45. Which sentence from the excerpt best explains why the professor is eager to send the narrator on an expedition?

A. "I believe now that Professor Farrago perfectly interpreted my thoughts, but he betrayed neither resentment nor impatience." (paragraph 25)

B. "Together we made out a list of articles necessary for me and itemized the expenses I might incur, and I set a date for my return, allowing no margin for a successful termination to the expedition." (paragraph 26)

C. " 'What I want you to do is to get those birds here safely.' " (paragraph 27)

D. " 'I can't get away from the idea that we are on the eve of acquiring the rarest of living creatures.' " (paragraph 33)

46. How does paragraph 34 help develop the plot of the excerpt?

E. It shows that the narrator is beginning to consider the possibility of finding the great auks.

F. It demonstrates that the narrator is struggling to understand why the professor thinks the great auks exist.

G. It establishes that the narrator is willing to let the professor overrule him about the great auks.

H. It emphasizes that the narrator feels a sense of urgency to complete the expedition to locate the great auks.

47. Which sentence best demonstrates the professional relationship between the narrator and the professor?

A. "He disengaged the sheet of paper and handed it to me." (paragraph 4)

B. "Clearly, Professor Farrago was on the verge of dotage—ah, what a loss to the world!" (paragraph 24)

C. "I drew a chair up beside his desk—there was nothing to do but to obey, and this fool's errand was none of my conceiving." (paragraph 25)

D. " 'Very well,' said Professor Farrago, good-humoredly, 'you shall have all the assistance you may require.' " (paragraph 29)

48. How does the author develop the contrast between the narrator's point of view and the professor's point of view?

E. by providing both the narrator's and professor's thoughts on how age and experience influence each other's reasoning

F. by using the conversation between the narrator and the professor to emphasize their reactions to the letter

G. by describing the professor's persistent efforts to change the narrator's mind about the letter

H. by including dialogue that explains why the professor is the supervisor and the narrator is his subordinate

For centuries, scientists were confounded by an animal that seemed to look and act like a combination of a bird, a reptile, and a mammal. It has a bill like a duck and lays eggs but produces milk for its young. It lives in a burrow, has fur, and can make venom. We now know that this animal is called a duck-billed platypus. A platypus is a monotreme, a type of egg-laying mammal.

Excerpt from "Research Riddle Resolved"

1 Hundreds of years after the first sightings of the platypus, the animal still captures our imagination anew and irresistibly attracts the attention of science writers everywhere. The May 2008 *Nature* report detailing the DNA insides of the duck-billed platypus invited colorful tales from just about every mainstream media outlet.

2 But cuteness and weirdness aside, the platypus research results are a gold mine for medical researchers. The findings cement what may have seemed totally obvious but turned out to be a bit of a scientific surprise: platypus DNA is a patchwork of genes from reptiles, birds, and mammals.

Evolution Fusion

3 In other words, the platypus heritage is laid out in an evolutionary DNA tapestry that marks the time, hundreds of millions of years ago, when reptiles and mammals branched off the evolutionary tree.

4 So what? The platypus is nothing like a human, so what can its DNA tell us about people and the diseases we get?

5 Plenty, says an international team of scientists who did this work.

6 The platypus genome results are far more than confirmation of a scientific oddity. They provide researchers a window into a time in history when mammals became unique—gaining the ability to bear live young, produce milk for them, and grow a warm, furry coat.

7 That's important because our own, modern-day genomes are still a big mystery and researchers need much more information to be able to translate our genetic language into useful health knowledge.

8 One of the ways scientists can decipher meaning from within our 3 billion DNA "letters," or nucleotides, is to compare human genes with those from animals, to see what has been kept the same and what has evolved to be different. . . .

Same and Different

9 In an approach called comparative genomics, scientists compare the genome sequences of several species: human, mouse, and a wide variety of other organisms from single-celled fungi to elephants and, now, the platypus.

10 The goal of this research is to find regions of similarity and difference in order to better understand the structure and function of human genes.

11 Comparative genomics is directly related to evolution because all living things share a common ancestor. By using computer tools to examine genes that have been kept the same in many organisms over millions of years, researchers can locate signals that control how genes work. This information may translate into ways to understand, treat, and prevent human diseases. . . .

Chicken or Egg?

12 When researchers analyzed platypus DNA and compared it to that of chickens, snakes, and lizards, the findings traced the evolutionary path from birds and reptiles to mammals. They learned that the platypus lost most of its genetic ability to produce egg yolk—as compared to chicken genes. This suggests its departure from "chicken-ness."

13 But, through evolutionary change, the platypus gained the ability to make milk that is rich in nutrients. Platypuses have genes that make the milk protein casein: just like we do.

14 A male platypus can, like its ancestral snake and lizard cousins, produce venom. The platypus ejects this venom through special glands in its back legs. The evolutionary reason for maintaining such molecular weaponry isn't yet clear, but what is fascinating is that it appears nature mixed and matched together DNA pieces separately to create the venom genes in reptiles and monotremes like the platypus.

15 The scientific value of pinning genetics to physiological function—like milk production—is high. Such investigations may help medical researchers understand health issues related to reproduction and lactation. Although lactation is an ancient reproductive trait, mammals—including the platypus—are unique in their ability to produce milk that is extraordinarily nutritious, containing a rich blend of sugars, fats, and proteins.

16 More generally, though, studying how nature cuts and pastes gene modules gives scientists an inside scoop on how genetic changes relate to health and disease risk.

17 One thing is clear—the stunning blend of reptile, bird, and mammal puts the platypus in a class of its own, and it gives researchers much more: information about how mammals like us came about.

18 [Scientists'] genetic sleuthing of platypuses, chimps, fish, sunflowers—you name it—continues to teach scientists how millions of years of evolution progressed. This provides vital information to understanding the role of genes in the health and disease of mammals like us and our pets, and can also help preserve our rich and diverse planet.

From "Research Riddle Resolved"—Public Domain/National Institutes of Health

49. Read this sentence from paragraph 2.

> **But cuteness and weirdness aside, the platypus research results are a gold mine for medical researchers.**

The sentence contributes to the overall structure of the excerpt by

A. shifting the focus of the excerpt from the platypus's unique appearance to its physiology.

B. highlighting how the platypus's unusual appearance has attracted scientists' attention.

C. revealing current ideas about the genetic background of the platypus.

D. introducing the platypus's scientific significance that the rest of the excerpt develops.

50. The phrase "evolutionary DNA tapestry" in paragraph 3 conveys the idea that the platypus

E. has a rich and diverse genetic history linked to reptiles, birds, and other mammals.

F. was able to develop its mammalian and reptilian traits at different points in time.

G. continues to be the best resource for studying the evolution of animal genomes.

H. is especially useful to researchers because its genes have never been altered.

51. How do paragraphs 4–6 contribute to the development of ideas in the excerpt?

A. They summarize the evidence that the platypus genome is an evolutionary peculiarity.

B. They provide a transition from the discussion about the study of the platypus to a discussion about the study of the human genome.

C. They highlight the idea that mammals share several significant similarities even though the group is diverse.

D. They explain why the platypus's genetic material is interesting to researchers who are trying to understand humans and other mammals.

52. How does paragraph 8 fit into the overall structure of the excerpt?

E. It provides a transition from the discussion of the platypus genome to a discussion on comparative genomics.

F. It introduces the way that scientists study the evolution of genetic material within a particular species of animal.

G. It contrasts the efforts made to study the different parts of the human genome with the efforts made to study certain animal genomes.

H. It elaborates on the idea that deciphering genetic signals is a rigorous research challenge.

53. Which sentence gives the best summary of the section "Same and Different" (paragraphs 9–11)?

A. The platypus is the most recent of several species whose genomes have been compared with the human genome.

B. Comparative genomics is an effective way to examine a variety of different species, from single-celled organisms to large mammals.

C. Comparing human and animal genes and studying which genes are the same across species may lead to a greater understanding of human diseases.

D. Scientists are able to use computers in order to compare and examine evolutionary changes in genes across a number of species, including humans.

54. The details in paragraphs 12–14 about the platypus's different abilities convey a central idea of the excerpt by

E. showing that the platypus has a gene that allows it to produce milk that is rich in nutrients, as humans do.

F. proving that the platypus, whose DNA is made up of DNA from several other species, has developed venom to defend itself.

G. suggesting that the platypus, while gaining traits in common with mammals and reptiles, has lost some bird-like traits.

H. demonstrating that the platypus has a rare evolutionary background that includes bird, reptile, and mammal DNA.

55. Which sentence from the excerpt best supports the idea that the same DNA material results in the same traits even in different classes of animals?

A. "The findings cement what may have seemed totally obvious but turned out to be a bit of a scientific surprise: platypus DNA is a patchwork of genes from reptiles, birds, and mammals." (paragraph 2)

B. "In other words, the platypus heritage is laid out in an evolutionary DNA tapestry that marks the time, hundreds of millions of years ago, when reptiles and mammals branched off the evolutionary tree." (paragraph 3)

C. "The platypus is nothing like a human, so what can its DNA tell us about people and the diseases we get?" (paragraph 4)

D. "The evolutionary reason for maintaining such molecular weaponry isn't yet clear, but what is fascinating is that it appears nature mixed and matched together DNA pieces separately to create the venom genes in reptiles and monotremes like the platypus." (paragraph 14)

56. How can researching the genomes of other animals inform scientists' understanding of human health and disease?

E. Tracking how other animals evolved over millions of years helps researchers preserve and sustain nature.

F. Finding ways that animal genomes are similar to the human genome helps researchers find signals that control genes.

G. Observing that all living things evolved from a common ancestor helps researchers pinpoint certain genetic traits.

H. Understanding how other animals are similar to one another helps researchers understand how humans evolved.

57. The author elaborates on the idea that creating a full analysis of platypus DNA was an important scientific endeavor mainly through

A. a description of the type of information about human genetics that specialized research can yield.

B. a comparison of the platypus with its closest bird and reptile relatives on the evolutionary tree.

C. the discussion of how unusual the platypus genome is in the animal kingdom.

D. the explanation of how genetics can be aligned to physiological function.

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.

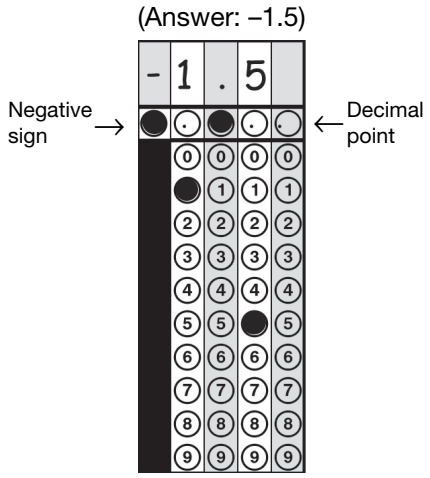
(5) Reduce (simplify) all fractions to lowest terms.

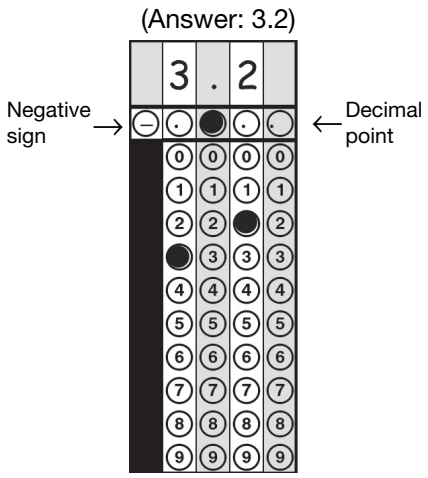
GRID-IN QUESTION NOTES

(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.





CONTINUE TO THE NEXT PAGE ►

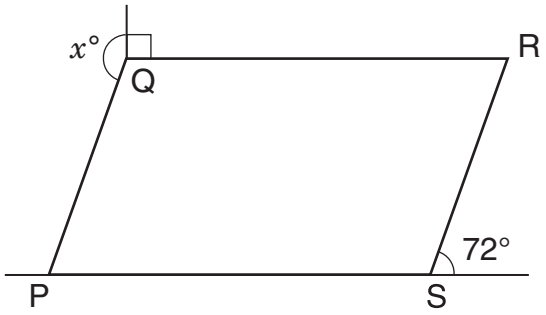
Grid-In Questions

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.



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

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

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

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

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

How many students were surveyed?

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

Multiple Choice Questions

Questions 63–114

DIRECTIONS: Solve each problem. Select the best 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. The set of possible values of m is {5, 7, 9}. What is the set of possible values of k if $2k = m + 3$?

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

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

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

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

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

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

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

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

A. 0.001

B. 0.01

C. 0.1

D. 0.12

68.

PEOPLE PER VEHICLE AT CHECKPOINT

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

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

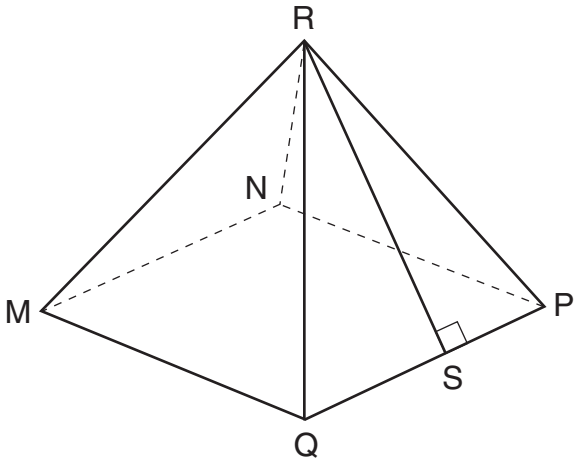
E. 42

F. 63

G. 105

H. 315

69.



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

A. 48 sq cm

B. 96 sq cm

C. 128 sq cm

D. 160 sq cm

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

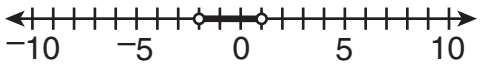
E. 150 cm by 105 cm

F. 153 cm by 102 cm

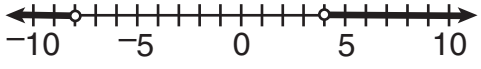
G. 158 cm by 97 cm

H. 165 cm by 90 cm

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

A. 

B. 

C. 

D. 

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

E. 4

F. 8

G. 10

H. 20

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

A. 5

B. 15

C. 21

D. 30

74. 1 dollar = 7 lorgs

1 dollar = 0.5 dalt

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

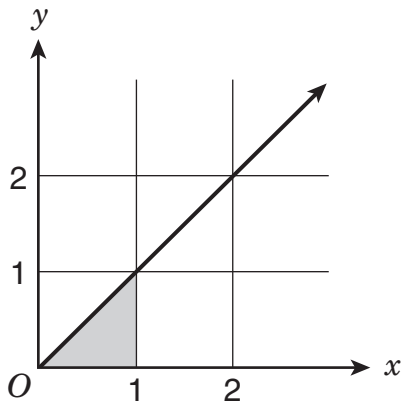
E. $28

F. $52

G. $182

H. $282

75.



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

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

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

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

77. Mrs. Cranston bought five bottles of water for $0.90 each and 8 pounds of meat. She paid a total of $26.90 for these items, not including tax. What was the price per pound of the meat?

A. $2.80
B. $3.25
C. $14.40
D. $22.40

78. In a sample of 10 cards, 4 are red and 6 are blue. If 2 cards are selected at random from the sample, one at a time without replacement, what is the probability that both cards are **not** blue?

E. $\frac{2}{15}$
F. $\frac{4}{25}$
G. $\frac{3}{10}$
H. $\frac{1}{3}$

79.

1 sind = 4 lorgs

2 plunks = 5 dalts

5 sinds = 2 harps

1 plunk = 3 harps

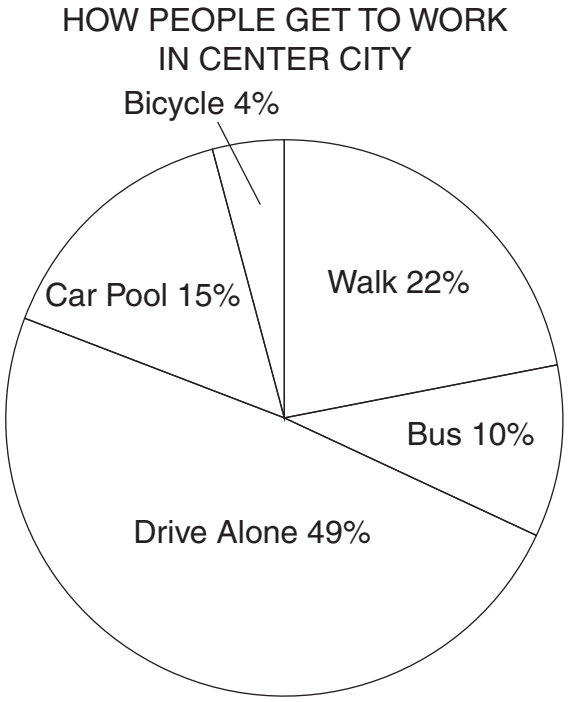
A nation has five types of coins: sinds, dalts, lorgs, harps, and plunks. The relationship between the coins is shown above. Which coin is most valuable?

A. sind
B. dalt
C. harp
D. plunk

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

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

81.



Total number of people working in Center City = 15,000

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

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

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

E. 30

F. 35

G. 39

H. 44

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

A. 16 ft

B. 32 ft

C. 40 ft

D. 48 ft

84.

SCORES ON MATH QUIZ

Score	Number of Students
85	4
75	4
65	2

What is the mean score of the 10 students in the table above?

E. 22.5

F. 75

G. 77

H. 85

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

A. $2l$

B. $3l$

C. $l+2$

D. $l+5$

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

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

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

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

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

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

A. 4 years old

B. 6 years old

C. 12 years old

D. 16 years old

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

E. 0

F. 1

G. 2

H. 12

89. $$2\frac{1}{5} + 3\frac{3}{10} + 4\frac{2}{5} + 5\frac{1}{2}$$

What is the value of the expression shown above?

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

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

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

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

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

E. 3 ft

F. 4 ft

G. 6 ft

H. 8 ft

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

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

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

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

93.



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

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

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

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

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

A. $2\frac{1}{6}$ hr

B. $3\frac{1}{4}$ hr

C. $3\frac{3}{4}$ hr

D. $7\frac{1}{2}$ hr

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

E. $\frac{wx}{yz}$

F. $\frac{wy}{xz}$

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

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

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

A. 5

B. 6

C. 13

D. 15

98. If $3n$ is a positive even number, how many **odd** numbers are in the range from $3n$ up to and including $3n + 5$?

E. 2

F. 3

G. 4

H. 5

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

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

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

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

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

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

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

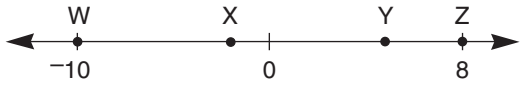
E. x

F. xy

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

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

101.



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

A. 8

B. 11

C. 12

D. 18

102. A metal square used in an electronic device must have a thickness of 0.02 inch, with an allowable error of 1 percent. What is the **greatest** allowable thickness of the metal square?

E. 0.0002 in.

F. 0.02 in.

G. 0.0202 in.

H. 0.03 in.

103.

SCORES ON BIOLOGY TEST

Section	Lowest Score	Range
I	65	28
II	62	25
III	67	22

Mr. Blake's biology class is divided into three sections. The same test was given to each section. The table above shows both the lowest score and the range of scores on this test for each section. What is the **overall** range of all scores in all three sections?

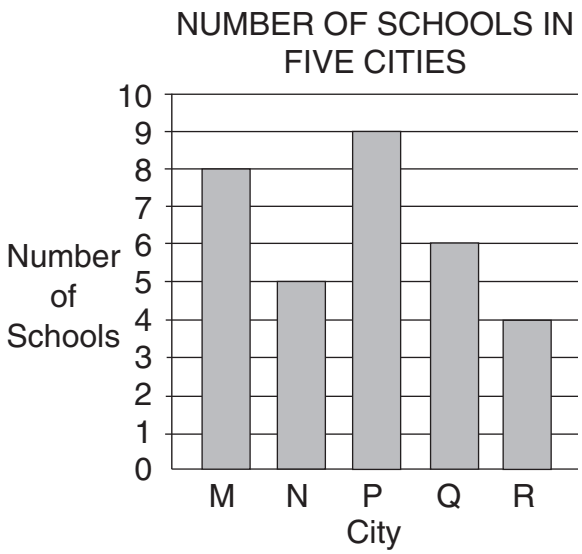
A. 25

B. 27

C. 28

D. 31

104.



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

E. City M

F. City P

G. City Q

H. City R

105. $\frac{10}{13} = 0.\overline{769230}$

In the infinitely repeating decimal above, 7 is the first digit in the repeating pattern. What is the 391st digit?

A. 0
B. 3
C. 6
D. 7

106. A car travels at 4,400 feet per minute. The radius of each tire on the car is 1 foot. How many revolutions does one of these tires make in 1 minute? (Use the approximation $\frac{22}{7}$ for π.)

E. 700
F. 1,925
G. 13,828
H. 15,400

107. $100(2 + 0.1)^2 - 100 =$

A. 101
B. 200
C. 301
D. 341

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

E. $\frac{1}{37}$
F. $\frac{1}{8}$
G. $\frac{8}{37}$
H. $\frac{8}{29}$

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

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

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

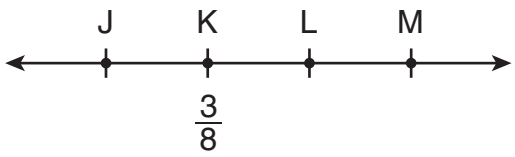
E. 21.65

F. 119.38

G. 121.92

H. 139.70

111.



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

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

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

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

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

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

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

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

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

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

113.

SERVINGS OF FRUITS AND VEGETABLES

Number of Servings of Fruits and Vegetables	Number of Students
0	5
1	7
2	3
3	4
4	0
5	1

There are 20 students in a class. The frequency table above shows the number of students in this class who ate 0, 1, 2, 3, 4, or 5 servings of fruits and vegetables yesterday. What is the mean number of servings of fruits and vegetables eaten yesterday per student in this class?

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

B. 3

C. $3\frac{1}{3}$

D. 4

114. A paste used to cover a billboard is made by mixing the following ingredients by weight:

4 parts powder, 3 parts water, 2 parts resin, and 1 part hardener. To cover one billboard requires 30 pounds of this paste. How many total pounds of resin are required to cover 4 billboards?

E. 6

F. 8

G. 24

H. 48

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. ■

CONTINUE ON TO THE NEXT PAGE ▶

FORM A SAMPLE TEST – ENGLISH LANGUAGE ARTS EXPLANATIONS OF CORRECT ANSWERS

REVISING/EDITING PART A

1. The question asks which edit should be made to correct the sentence.

A. **CORRECT.** The sentence in the box needs a comma to separate the coordinate adjectives. Coordinate adjectives describe characteristics of the same noun or subject and are connected with a comma or "and." This option is the only one that places a comma where it is needed, between the coordinate adjectives "agile" and "athletic."

B. Incorrect. The option incorrectly adds a comma in the middle of the phrase "first and only," which modifies, or gives additional information about, "professional basketball player."

C. Incorrect. The option incorrectly adds a comma between two adjectives that are not coordinate adjectives. "Only" is part of the phrase "first and only" and is modifying "professional basketball player."

D. Incorrect. The option is incorrect because a comma is not needed to set off the phrase "to score 100 points in a single game."

---

2. The question asks for the most precise revision for the words "The engineers tried some other things."

E. Incorrect. This revision uses the word "materials" rather than precisely identifying what the engineers used.

F. **CORRECT.** This option revises the words to be more precise by using the specific words "tested" for the verb and "foam and fiberglass" for the materials.

G. Incorrect. This revision uses the word "examined" rather than a word indicating a process of experimental trial and error. The sentence also uses the word "materials" rather than precisely identifying what the engineers used.

H. Incorrect. This revision identifies the materials, but the imprecise verb "worked with" does not specify what the engineers were doing.

3. The question asks for the revision that corrects the error in sentence structure in the paragraph.

A. CORRECT. As written, the first sentence ("In 1967 Katherine Switzer . . . legendary race.") is a run-on sentence because a comma is used to combine two independent clauses. Independent clauses are complete sentences with a subject and a verb. The clauses—"In 1967 Katherine Switzer signed up for the Boston Marathon using her first and middle initials instead of her full name" and "at that time, only men were permitted to officially register and receive a number for the legendary race"—should be separated with a period instead. This revision correctly places a period after the word "name" and capitalizes the word "At" to separate the two independent clauses into two sentences.

B. Incorrect. The revision introduces an error into the paragraph and does not revise the run-on in the first sentence. The clause "Once officials realized a woman was attempting to run in the race" is a dependent clause functioning as an adverb of the independent clause that follows it. Changing the comma after the word "race" to a period would incorrectly separate the adverbial dependent clause from the independent clause.

C. Incorrect. The revision introduces an error into the paragraph and does not revise the run-on in the first sentence. The sentence "Switzer prevailed and finished in just over four hours, paving the way for the official rule change that allowed for the inclusion of women" is a complex sentence, which combines an independent clause ("Switzer prevailed and finished in just over four hours") and a dependent clause ("paving the way for the official rule change that allowed for the inclusion of women"). The clause "paving the way for the official rule change that allowed for the inclusion of women" is not a complete sentence and must stay connected to the first part of the sentence. Changing the comma after "hours" to a period would incorrectly separate the dependent clause from the independent clause.

D. Incorrect. The revision introduces an error into the paragraph and does not revise the run-on in the first sentence. Changing the comma after "261" to a period would incorrectly separate the modifying clause "the same number she had worn in that first run in 1967" from the words it describes ("number 261"). Additionally, the clause "the same number she had worn in that first run in 1967" is not a complete sentence.

4. The question asks for the identification of the sentence that contains an error in its construction and should be revised.

E. Incorrect. There are no errors in sentence 1. The singular pronoun "its" matches the number of the word it refers to, the singular noun "blobfish." Additionally, the clause "a creature that certainly resembles its name" is correctly set off by commas to provide an additional, but not essential, detail about the blobfish. The comma separating "pink" and "gelatinous" is correct because these are coordinate adjectives.

F. Incorrect. There are no errors in sentence 2. The singular pronouns "it" and "its" match the number of the word they refer to, the singular noun "blobfish." Additionally, the structure of the sentence correctly shows that the clause "Because it has very few muscles and its density is close to that of water" modifies the words "the blobfish."

G. Incorrect. There are no errors in sentence 3. The "it" and "its" in the sentence refer to "the blobfish" mentioned in the previous sentence. The use of singular pronouns in sentence 3 is consistent with the rest of the paragraph.

H. CORRECT. Sentence 4 contains an error because the sentence uses the plural pronoun "them" to refer to "The blobfish's," which is singular in number. The word "them" should be changed to "it." The paragraph refers to the blobfish as a singular species in each of the four sentences, and sentence 4 should be revised to match.

REVISING/EDITING PART B

Cracking the Code

5. The question asks for the best way to combine sentences 3 through 5 to clarify the relationship between ideas.

A. Incorrect. While this sentence shows a relationship between the ideas, it does not clarify the relationship accurately. Learning the language of code does not depend on people's previous ability to construct programs that will perform detailed and complex tasks. The word "because" incorrectly indicates that people can already construct complex programs prior to learning the coding language that would allow them to do so.

B. **CORRECT.** This sentence accurately shows the relationship between the ideas of the sentences. Before people can construct programs that will perform detailed and complex tasks, they have to learn a coding language. Knowing that language will, in turn, allow them to build programs that can perform detailed and complex tasks.

C. Incorrect. This sentence does not accurately express the relationship between ideas because the sentence implies that some people who code do not have to learn the language to perform their job functions. The passage clearly states that "computer code is part of every electronic interaction" (sentence 1) and that "programmers use it to instruct computers to perform different tasks" (sentence 2).

D. Incorrect. The conditional (If . . . then) construction of the sentence in Option D does not convey the intended relationship of the ideas in the sentences. The "then" statement ("they can construct programs that will perform detailed as well as complex tasks") does not follow the condition of the "if" statement ("people who code have to learn this language").

---

6. The question asks for the sentence that should follow sentence 5 to best state the main claim in the passage.

E. **CORRECT.** This sentence logically follows sentence 5 and introduces the main idea of the passage: that due to the high demand for coding skills across a wide range of industries and disciplines, learning basic coding skills can provide a range of opportunities for personal growth.

F. Incorrect. While this sentence incorporates a point made in the passage about how coding can benefit many occupational fields (sentence 10), this idea alone does not address the entire argument in the passage. This sentence does not capture the passage's emphasis on the variety of ways people can learn how to code (sentence 14).

G. Incorrect. While this sentence incorporates ideas about opportunities to learn coding skills in school (fourth paragraph), the larger claim presented in the passage is not about opportunities schools should offer in order to help students learn to code. The passage primarily focuses on the opportunities offered to people who take on the challenge of learning to code.

H. Incorrect. Although the passage discusses the opportunities that are available to some students to learn coding skills in school (sentences 15–16), this point is a supporting detail of the passage, not the main claim of the passage.

7. The question asks for the best revision of sentence 10 to provide a transition to the argument in the third paragraph.

A. Incorrect. Some readers may choose this option because the second paragraph does discuss the complexities of coding; however, it does not discuss the difficulties of learning coding. The third paragraph demonstrates some of the complex ways coding is used in specific fields but does not illustrate how difficult learning coding may be.

B. **CORRECT.** This sentence provides the best revision of the transition sentence. The second paragraph ends with "the possibilities for applying them are infinite" (sentence 9), which supports the idea that people in "many occupational fields" (sentence 10) can benefit from having coding skills. The third paragraph illustrates this idea by providing specific examples of occupations that benefit from coding (stock market traders and doctors).

C. Incorrect. While sentence 13 suggests that employers recognize the value of coding skills, sentences 11 and 12 give examples of different industries that employ people who know how to code. The transition sentence should introduce the idea that coding skills are valuable to potential employees.

D. Incorrect. Some readers may choose this option because the second paragraph provides a brief definition of coding—"A coding language uses letters, numbers, and symbols that are arranged in a way that makes sense to a computer" (sentence 6)—which shows how this element of programming works, but the second paragraph does not specifically discuss what makes the field of computer programming unique. The third paragraph discusses how coding can be used in a variety of occupational fields (sentence 10).

---

8. The question asks which sentence would best follow sentence 13 and support the ideas in the third paragraph.

E. Incorrect. While this sentence provides an example of a high salary, which is mentioned in the paragraph (sentence 13), the reference to "Experienced programmers, software engineers, and system administrators at large companies" focuses on specific occupations that may use coding, as opposed to the range of diverse occupations discussed in the third paragraph.

F. Incorrect. While sentence 12 does mention coding skills in the medical field as an example, the information provided in this answer supports only that idea and not the other ideas expressed in the third paragraph.

G. Incorrect. This sentence generally discusses employers looking for two things: "experience in a specific industry" and "knowledge of basic coding." The third paragraph, however, discusses the possibilities of using coding skills in a variety of occupations. The words "experience in a specific industry" do not connect to the idea the paragraph develops.

H. **CORRECT.** This sentence provides specific evidence of the job market favoring potential employees who have coding ability. It supports what is stated in sentence 13, that "jobs that require coding skills are typically higher paying."

9. The question asks which concluding sentence would best follow sentence 20 and support the argument presented in the passage.

A. Incorrect. While the passage does state that "jobs that require coding skills are typically higher paying" (sentence 13), it does not say or imply that coding skills are needed for most high-paying jobs.

B. **CORRECT.** The sentence successfully summarizes the main argument of the passage, which is that coding is involved in all electronic interaction (sentence 1) and is a useful skill to master, especially in many occupational fields (sentence 10).

C. Incorrect. In the fourth paragraph, the passage does promote students taking advantage of opportunities to learn coding; however, this information is a supporting detail and would not serve as a strong conclusion to the argument presented in the passage.

D. Incorrect. Some readers may choose this sentence because the fourth paragraph discusses how "some students may become interested in learning how to create programs, such as games and apps" (sentence 18), but this detail is only one part of the overall argument in the passage.

READING COMPREHENSION

The Best Laid Plans of Ravens

10. The question asks how paragraph 1 introduces the ideas that ravens may perceive time and plan for the future.

E. Incorrect. In the poem referenced in paragraph 1, the narrator does not consider whether a raven can see the future but believes it is actually happening. Additionally, the discussion in paragraph 1 is about how people have historically doubted animals' ability to plan, not about why people have doubted this ability in ravens specifically.

F. **CORRECT.** Edgar Allan Poe's poem features a raven that speaks in a prophetic way. Since prophecies are a prediction of the future, the statement suggests that the raven has a sense of time. This reference is then tied to a modern study where "researchers argue that ravens may be able to think ahead and even plan for the future" (paragraph 1).

G. Incorrect. Although the idea of a raven being aware of the future in the poem is tied to a study that "hints that one particular idea behind the poem might not be as far-fetched as it seems" (paragraph 1), this connection does not prove that the poem is what prompted scientists to conduct such a study.

H. Incorrect. Paragraph 1 introduces the idea "that ravens may be able to think ahead and even plan for the future" but does not explain in detail the importance of differentiating between whether ravens act on instinct or have the ability to plan.

11. The question asks which sentence from paragraph 4 supports the argument presented in the sentence from paragraph 1.

A. Incorrect. This sentence from paragraph 4 refers to the ravens' ability to adapt and learn but not to plan and think ahead.

B. Incorrect. This sentence from paragraph 4 relates the actions of the researcher rather than the actions of the ravens and does not provide evidence in support of the argument that ravens have the ability to think and plan ahead.

C. Incorrect. This sentence from paragraph 4 does not describe a behavior of the ravens that would support the argument in the sentence from paragraph 1; instead it relates the actions of the researchers without giving any information about the ravens' responses.

D. **CORRECT.** This sentence from paragraph 4 shows that the ravens seem to make a decision, which involves a thought process. The ravens chose to wait for the researcher rather than take the treats, suggesting that the ravens understood that the researcher would trade a larger treat for the bottle cap.

---

12. The question asks which statement describes the effect in the passage of the phrase "merely instinctual" from paragraph 2.

E. Incorrect. The passage does not question animals' ability to find and save food but rather whether this or other behavior involves thought and planning for the future.

F. Incorrect. While the sentence states that "many animals hoard food," the passage does not suggest that they give priority of thought to this activity; they hoard food out of instinct.

G. Incorrect. Although the passage discusses animals' tendency to store a great deal of food, it does not suggest that their hoarding goes beyond their needs.

H. **CORRECT.** The passage suggests that in order for an animal's actions to qualify as planning for the future, "the animal must use specific decision-making skills to solve a problem" (paragraph 2). The behavior of hoarding food is based on instinct and done automatically without real thought.

13. The question asks which of the ravens' behaviors in the first experiment described in paragraph 4 most strongly supports the claim that the birds are capable of planning.

A. Incorrect. While "the researchers showed the birds how to use a small stone to open a box and get treats" (paragraph 4), the acceptance of the treats does not demonstrate planning.

B. **CORRECT.** Once the ravens learned which stone would open the box, they consistently selected only that stone.

C. Incorrect. Although the birds learned which stone opened the box, this behavior demonstrates not their ability to plan but rather their intelligence.

D. Incorrect. The birds' patience shows their anticipation for and understanding of the future gain of a treat but does not provide the strongest evidence of their ability to plan.

---

14. The question asks how the sentence from paragraph 4 fits into the overall structure of the passage and contributes to the development of ideas.

E. **CORRECT.** The patience the ravens demonstrated in the sentence from paragraph 4 while waiting for the return of the researcher in both experiments shows their understanding that the researcher's return holds a benefit for them.

F. Incorrect. The passage does not state that there was a set timeline for the researcher's return; the seventeen hours, mentioned in the sentence from paragraph 4, was just the longest time measured.

G. Incorrect. The experiment did involve the ravens solving a problem. The ravens' patience demonstrated an understanding that there would be future gain for them by waiting for the researcher, but the sentence from paragraph 4 does not demonstrate the ravens' ability to plan.

H. Incorrect. The way the ravens obtained the food from the researcher required far more than instinct; in order to get the maximum amount of food, a number of learned skills, such as selecting a stone that would open the box and choosing the bottle cap over the immediate treat, were necessary. The ravens' ability to wait, as demonstrated in the sentence from paragraph 4, does not influence or affect a learned behavior or a possible instinct to hoard food.

15. The question asks how paragraph 5 fits into the overall structure of the passage and contributes to the development of ideas.

A. Incorrect. While paragraph 5 states that "more evidence needs to be gathered before scientists can fully conclude that ravens can plan for the future," this statement suggests that more research is needed, not that the results of the Lund University study are problematic.

B. Incorrect. Paragraph 5 does not discuss steps of the study or emphasize difficulties in determining whether the behaviors shown in the study were planned or practiced; instead it simply suggests that more study is required to make such a determination.

C. **CORRECT.** Paragraph 5 notes that some doubt remains ("Some scientists argue that the ravens might be choosing the stone and bottle cap because the ravens have been trained to do so, not necessarily because the ravens are thinking ahead") and that more experimentation is needed; the author concludes that there is reason to believe the originally stated theory that ravens are quite smart and can give thought to how future events may affect them.

D. Incorrect. Paragraph 5 does not list the effects of the study or criticize the experiment for not differentiating between planning and instinct. The paragraph explains why the results of the experiments are not conclusive and emphasizes that more research is needed.

---

16. The question asks how the author conveys a point of view on the study of animal intelligence.

E. **CORRECT.** Paragraphs 3 and 4 focus on the process and details of the experiments that scientists conducted. This detailed information from the author provides a sense of how the ravens demonstrated planning abilities beyond natural instinct. The author supports the claims from the experiments, calling the findings "exciting" and stating in the conclusion that "these experiments show that ravens could be much smarter than first believed" (paragraph 5).

F. Incorrect. Although two experiments are described in the passage, the description presents the experiments as building on each other and does not compare their results. The passage states that "these experiments show that ravens could be much smarter than first believed, and scientists now believe that ravens do actually think about their own future" (paragraph 5).

G. Incorrect. The author presents information from the experiments and the results that were gathered from them; while there is an admission that "more evidence needs to be gathered before scientists can fully conclude that ravens can plan for the future" (paragraph 5), the author does not criticize the experiments that are presented.

H. Incorrect. While the author does discuss some previously held beliefs about animal intelligence in paragraph 1, the focus of the passage is that experiments indicate that there is reason to question these beliefs, since "these experiments show that ravens could be much smarter than first believed"(paragraph 5). The previously held beliefs are not considered inaccurate by the discussion in the passage because only one example—the raven—is provided. The passage does not state that beliefs about animal intelligence as a whole are inaccurate.

17. The question asks the reader to choose the statement with which the author of the passage would most likely agree.

A. Incorrect. It is very likely that additional experiments or changes to the experiments presented can help scientists tell the difference between the types of behavior that the animals are showing. The current research supports "other recent advances in animal science" and also shows that ravens are "much smarter" (paragraph 5) than previously believed, making them excellent candidates for further research.

B. **CORRECT.** As paragraph 5 notes, "more evidence needs to be gathered before scientists can fully conclude that ravens can plan for the future." The evidence is not yet considered definitive because "some scientists argue that the ravens might be choosing the stone and bottle cap because the ravens have been trained to do so, not necessarily because the ravens are thinking ahead" (paragraph 5). Therefore, more research is needed in order to draw a complete conclusion as to whether or not the animals are demonstrating advanced intelligence or simply the results of training.

C. Incorrect. The passage shows that the scientists did not draw conclusions based on one experiment alone. The passage also states in paragraph 5 that additional research and experiments are necessary in order to obtain conclusive evidence of ravens' abilities to think and plan ahead.

D. Incorrect. The passage claims that more evidence must be gathered in order to make a claim that animals can definitely plan for the future. The evidence presented helps scientists "believe that ravens do actually think about their own future" (paragraph 5), but more confirmation is needed. The passage does not discuss performing experiments on additional species.

Excerpt from *Winter Wheat*

18. The question asks how the sentences in paragraph 2 help develop a theme of the excerpt.

E. Incorrect. Although the sentences from paragraph 2 describe Ellen's "funny feeling" upon realizing that she will no longer be home when the beans that her mother is making are ready to eat, the details do not show that life presents many challenges. Additionally, the theme that life presents people with many challenges is not a theme found in the excerpt.

F. Incorrect. The sentences from paragraph 2 state that Ellen has "a funny feeling" while awaiting a major life event, but they do not indicate that she is confused or stressed. The details in the sentences convey a sense of wistfulness, but the theme that the stress of major life events causes confusion is not found in the excerpt.

G. **CORRECT.** The sentences from paragraph 2 show that Ellen's mother has moved on from the familiar and left her childhood home behind, just as Ellen is about to do. This information links the experiences of parent and child and helps develop the theme that moving beyond the familiar is a common human experience.

H. Incorrect. Although the sentences from paragraph 2 show that Ellen's mother has learned to cook New England food very well ("as though she were a New Englander herself"), they do not provide information about how easy or difficult it was for Ellen's mother to learn a new way of cooking. The theme that people can easily learn the routines of a new culture is not a theme found in the excerpt.

19. The question asks how the sentence from paragraph 3 contributes to the conflict in the excerpt.

A. Incorrect. Although Ellen's father does want to drive to the city, this sentence does not reveal his reasons for wanting to do so. Ellen's father's wish to drive to the city is important to the conflict of the excerpt not because of his underlying reasons but because his wish differs from Ellen's mother's wish to take Ellen to the train at Gotham—a difference of opinion that introduces tension between the parents.

B. **CORRECT.** The sentence causes Ellen's parents to propose competing options for taking her to the train, and the resulting conversation recalls fraught memories of an earlier leave-taking in the family. The disagreement between Ellen's mother and father over where to take Ellen to catch the train heightens the tension between them. Because the primary conflict of the excerpt is Ellen's anxiety about the effect her leaving will have on the relationship between her parents, this remark contributes to the conflict by bringing her parents' disagreement into view.

C. Incorrect. Although Ellen will put physical distance between herself and her parents on the following day, the remark she makes does not lead her to emotionally distance herself from her parents. Moreover, the emotional distance between Ellen and her parents is not the primary source of conflict in the excerpt.

D. Incorrect. While paragraph 1 states that Ellen's mother "seems to think of nothing farther away than today or perhaps yesterday or tomorrow morning," the sentence in paragraph 3 does not show any reluctance to plan far in advance. Moreover, planning for the future is not a source of conflict in the excerpt.

---

20. The question asks how the phrase "looked straight at it" in paragraph 9 contributes to the meaning of the excerpt.

E. **CORRECT.** The phrase shows Ellen deciding to directly confront the memory even though she initially wanted to ignore it ("I couldn't keep from thinking of that time Dad went back East. I tried to" [paragraph 9]). Though the memory is emotionally fraught for Ellen, the phrase "looked straight at it" shows that she is willing to face problems—such as a painful family memory—head on.

F. Incorrect. The phrase in paragraph 9 does not show Ellen studying all parts of an issue but rather forcing herself to focus on something she would have preferred not to think about.

G. Incorrect. In looking "straight at" the memory, Ellen is not considering both sides of an argument. Instead, she is making herself think about an uncomfortable memory that she had been trying to avoid revisiting. The phrase indicates that she is finally willing to directly confront an unsettling recollection.

H. Incorrect. Given the detail in paragraph 9 that Ellen initially attempted to keep from thinking about her father's trip to Vermont, the phrase "looked straight at it" indicates a willingness, but not an eagerness, to seek wisdom from reflecting on past experiences.

21. The question asks how the words "cold" and "dark" affect the tone in paragraph 10.

A. Incorrect. The mood of paragraph 10 is primarily one of sadness as Ellen says goodbye to her father at the train station. The words "cold" and "dark" do not convey unpredictability but rather emphasize Ellen's feeling of loss over the departure of her father.

B. Incorrect. Although the father's departure causes tension with his wife (" 'I'll manage,' Mom snapped back" [paragraph 11]), Ellen does not display anger or resentment toward her parents.

C. Incorrect. Although Ellen's father states that he wishes his family could come with him on the trip to Vermont (" 'I wish you could go, Anna,' Dad said to Mom, 'and we could take Ellen' " [paragraph 12]), the words "cold" and "dark" describe Ellen's perspective on her father's departure. They create a tone of sadness from Ellen at being left behind rather than a tone of regret from her father because he has to leave.

D. CORRECT. In paragraph 10, Ellen states, "I could feel how cold and dark it was." The words "cold" and "dark" highlight her emotional response to the departure of her father, emphasizing the almost physical sense of grief she feels at being separated from someone so precious to her.

---

22. The question asks which sentence from the excerpt provides evidence that Ellen has a lot in common with her father.

E. CORRECT. This sentence from paragraph 1 shows that Ellen and her father both get excited about the coming of spring and share an interest in reading magazine serials (stories published in serial installments). The sentence implies that Ellen and her father have shared likes and interests, and therefore, it provides clear evidence that they have a lot in common.

F. Incorrect. While this sentence from paragraph 4 highlights the warm relationship between Ellen and her father and shows that he would like to take her to the train station in town, it does not provide clear evidence that they share a lot in common.

G. Incorrect. Although this sentence from paragraph 6 implies that Ellen understands her father well enough to intuit his preference to go to the train station in town ("but I knew he wanted to go into Clark City"), their closeness is not clear evidence that Ellen and her father have a lot in common.

H. Incorrect. While this sentence from paragraph 25 shows Ellen's concern about the effect that her leaving the farm will have on her parents, it does not provide clear evidence that Ellen and her father have a lot in common.

23. The question asks how the sentences from paragraph 1 and paragraph 19 help develop a central idea of the excerpt.

A. CORRECT. The sentences illustrate a practical aspect of Ellen's mother's personality and show that she is concerned with an immediate task that needs to be completed. The details in these sentences help develop the central idea that practical people focus on current needs—such as preparing food for the following day—rather than worrying about the future.

B. Incorrect. These sentences do not show Ellen's mother focusing on her daughter's needs before her own, and the idea that parents consider their own needs only after considering those of their children is not a central idea of the excerpt.

C. Incorrect. Although the sentence from paragraph 19 shows Ellen's mother planning a few hours ahead by preparing the next morning's breakfast, the idea that it is sometimes important to plan ahead is not a central idea of the excerpt, nor is it supported by the sentence from paragraph 1.

D. Incorrect. The details in the sentences do not show that it is a waste of time to dream about the future. The sentences highlight the tendency of Ellen's mother to focus her attention on the practical necessities of the moment, but the idea that dreaming about the future is a waste of time is not a central idea of the excerpt.

---

24. The question asks how the flashback in paragraphs 10–24 affects the plot of the excerpt.

E. Incorrect. The flashback does not show that Ellen and her mother faced extra work as a result of the father's trip to Vermont. Although paragraph 19 describes Ellen's mother making oatmeal for the next day's breakfast, this task was not extra work.

F. Incorrect. Although the flashback highlights Ellen's fondness for each of her parents, it describes her father's initial departure only and does not show what happened to the familial bond while he is away.

G. Incorrect. Although Ellen describes the memory of her father's departure as something she wanted to avoid thinking about, she does not fear that it will be too difficult to leave her parents. Instead, she is concerned about what will happen to her parents' relationship when she is no longer there.

H. CORRECT. The flashback illustrates the close connection that Ellen has with her parents by describing her sadness over the departure of her father ("My throat ached all the way" [paragraph 15]) and presenting a moment of comfort and reassurance between Ellen and her mother ("She laid her hand against my face and it felt rough and hard but firm" [paragraph 20]).

25. The question asks which sentence from the excerpt provides evidence that Mom wants Ellen to understand the family's heritage.

A. Incorrect. Although this sentence from paragraph 2 describes a domestic moment that takes place within the family home, it does not relate to the heritage of either parent and therefore does not provide evidence that her mother wants Ellen to understand the family's heritage.

B. Incorrect. Although this sentence from paragraph 5 provides the name of the train station closest to Ellen's family's farm, the train stop at Gotham is not related to the family's heritage. Therefore, this sentence does not provide clear evidence that her mother wants Ellen to understand the family's heritage.

C. Incorrect. Although this sentence from paragraph 7 describes an aspect of the family dynamic (Ellen predicts that while browsing in stores in town, "Dad [would go] one way and Mom and I another"), their shopping habits do not provide clear evidence that her mother wants Ellen to understand the family's heritage.

D. **CORRECT.** In this sentence from paragraph 22, Ellen's mother addresses her by the Russian version of her name (Yeléna) and repeats her own Russian name (Anna Petrovna). The choice to call her daughter Yeléna instead of Ellen follows immediately after Ellen asks, "Mom, was that really your name—what Dad called you?" (paragraph 21), and the mother's surprised response provides evidence that she both wants and expects Ellen to understand the family's Russian heritage.

Massachusetts: Lowell National Historical Park

26. The question asks why the author includes the quotation from the Scottish traveler in paragraph 1 of the passage.

E. Incorrect. While it is likely that people outside the United States recognized that both the natural landscape and the bustling industry were significant, the quotation from the Scottish traveler is meant to convey the variety of the types of attractions in the U.S., not to make a general statement about their contribution.

F. Incorrect. The Scottish traveler mentions both "American scenery" and "American industry" in the quotation, but the intent is to highlight that they are each points of interest. The quotation does not provide a comparison of the two attractions.

G. **CORRECT.** The quotation emphasizes the idea that the United States offers different attractions. The Scottish traveler highlights the two places in the United States that he will most remember: first, the beautiful natural formation of Niagara Falls (" 'the glory of American scenery' ") and second, the industrial city of Lowell (" 'the glory . . . of American industry' ").

H. Incorrect. The Scottish traveler mentions both "American scenery" and "American industry" in the quotation but does not imply that the natural resources contributed to the development of industry.

27. The question asks which description conveys the central idea that Lowell was "one of America's most significant industrial cities" (paragraph 1).

A. Incorrect. While the passage does state that the city's canals, mills, and boardinghouses were built by early immigrants from Ireland, these details do not contribute to the development of the overall idea that Lowell was a significant industrial city.

B. Incorrect. The details about the women and immigrants who worked in the mills is important to the passage, but these details alone do not show that Lowell was a significant industrial city.

C. **CORRECT.** The details throughout the passage about the development of the mills and the people who worked in them convey the significance of Lowell in early American industry. Paragraph 2 shares details about the businesses that started in the early 1800s and contributed to the development of industry in the region ("The most recognized of these buildings are the Lowell Manufacturing Company chartered in 1821, the Suffolk or Wannalancit Mill completed around the 1880s, the Boott Mill Company established in 1835, and the Boott Mill Boardinghouse that opened in 1838"). Then paragraphs 3–6 provide specific details about the people who worked in the mills at different points in time.

D. Incorrect. Although the passage references Lowell's culturally diverse community ("Young Yankee women, immigrant families, and European tourists all flocked to Lowell to find work at one of the many textile mills" [paragraph 1]), these groups alone are not what marked Lowell as a significant industrial city.

---

28. The question asks for the sentence in paragraph 2 that best supports the idea that Lowell became "a bustling industrial city" (paragraph 1) in a short period of time.

E. Incorrect. While the sentence provides details on when the town of Lowell was founded and the natural features of the area, it does not support the idea that the city became "a bustling industrial city" in a short period of time.

F. Incorrect. Although this sentence indicates that the mill buildings were a noticeable feature of the city and provides details on how the mills worked, it does not specifically show that Lowell had become "a bustling industrial city" in a short period of time.

G. Incorrect. While this sentence lists some recognizable mill buildings along the river and notes when their associated businesses were established, it does not support the idea that Lowell had become "a bustling industrial city" in a short period of time.

H. **CORRECT.** This sentence indicates that within only a few decades of the city's founding, it experienced massive industrial growth, with "40 textile mills employing over 10,000 workers," supporting the idea that Lowell became "a bustling industrial city" in a short period of time.

29. The question asks which statement best describes how the sentence in paragraph 3 fits into the overall structure of the passage.

A. **CORRECT.** The sentence in paragraph 3 provides a transition from the overall description of the city and the mills to a description of the women who made up the workforce in the mills. The idea that women left domestic life in favor of working in the mills is important in the passage, and the sentence serves to connect that idea to the previous discussion about the mills.

B. Incorrect. While the mill girls' dissatisfaction with their working conditions is addressed later in the passage ("These wage cuts, deteriorating working conditions, and long workdays led the 'mill girls' to protest and organize strikes" [paragraph 4]), the sentence in paragraph 3 does not indicate a shift in tone from positive to negative. The sentence provides a transition to the discussion of the women who worked in the mills.

C. Incorrect. Although the sentence in paragraph 3 mentions that women became interested in working in the mills because of the "constricted lifestyle of small rural towns," structurally the sentence does not function as a summary because, instead of expanding on the idea of the difficulties or challenges of life in small rural towns and rural areas, the paragraph goes on to describe the advantages and disadvantages of life in the city for these women.

D. Incorrect. The sentence in paragraph 3 focuses on the choices women made to leave rural towns to work in the city in the early to mid-1800s, not the mid-1800s to the late 1800s. The sentence does not create a comparison between the workforce in the mid-1800s and that in the late 1800s.

---

30. The question asks how the sentence in paragraph 5 contributes to the development of ideas in the passage.

E. Incorrect. The sentence from paragraph 5 does not imply that Lowell was founded by early Irish immigrants. The sentence explains how Irish immigrants had been settling in Lowell since the city was established and that they contributed to the construction of the city, which allowed it to become an industrial center several decades later.

F. **CORRECT.** The sentence from paragraph 5 shows that early Irish immigrants were critical to the success of Lowell as an industrial city. This information supports the development of the idea that the work of Irish immigrants and immigrants from other places is an important element in the historical significance of industry in Lowell.

G. Incorrect. The sentence from paragraph 5 does not suggest that new Irish immigrants were readily accepted into the community. Paragraph 5 states that "initially, Lowell's Protestant community was slow to welcome Irish immigrants, but the hostility between Yankee Protestants and Irish Catholics eventually disappeared."

H. Incorrect. The sentence from paragraph 5 does not highlight the relationship between the mill girls and the new Irish immigrants. Paragraph 4 explains how the mill girls left Lowell, and paragraph 5 states that the mill girls were replaced by "predominantly Irish Catholics, who traveled to America during the Great Potato Famine" but does not discuss a relationship between them.

31. The question asks for the sentence that best summarizes the mill girls' time as the dominant workforce in Lowell.

A. Incorrect. While the passage explains that mill girls were initially eager to leave the domestic duties of life in rural areas, the summary sentence does not address the details about the mill girls' time working in the mills or the changes that led the mill girls to leave the industry.

B. Incorrect. Mill girls initially found satisfaction in the mill work and lifestyle, and when they did leave, immigrants filled the empty jobs. This summary sentence, however, does not address the details about the mill girls' time as the primary workforce in Lowell or the circumstances that led them to leave their jobs in the mid-1800s.

C. Incorrect. Mill girls did leave home to work in the Lowell mills, and they did grow dissatisfied over time, but this summary sentence does not include details about the mill girls' actions to improve the working conditions.

D. **CORRECT.** This sentence summary best captures the mill girls' experience as outlined in paragraphs 3 and 4. The sentence concisely summarizes both the women's initial excitement about the opportunity to live independently ("Women found that Lowell's mills offered monthly wages for their services and provided them room and board" [paragraph 3]) and their eventual inability to secure better working conditions ("When their demands went unheard, the women left Lowell, and immigrant groups replaced them in the workforce" [paragraph 4]).

---

32. The question asks for the reason that best illustrates why Lowell lost its status as an industrial leader.

E. Incorrect. While the passage discusses the "long work hours, low wages, and poor living conditions in the city's crowded tenements" (paragraph 6) in Lowell, these details highlight the living and working conditions of immigrant groups. The author does not state that poor living and working conditions are the reason Lowell lost its status as a "model of industry."

F. Incorrect. Paragraph 5 in the passage acknowledges that there was some tension between the different ethnic and religious groups in Lowell, but this idea is not what led to Lowell's decline as a "model of industry."

G. **CORRECT.** When Lowell was initially established, the mills in the city thrived because of their advanced manufacturing methods ("gaining global recognition for its state-of-the-art technology, innovative canal and dam system, [and] mill architecture" [paragraph 1]). However, manufacturing technology changed and improved over time, and many mill owners chose to close the mills rather than modernize them, resulting in Lowell's loss of status as a "model of industry" ("The city officially began to close down its mills in the 1920s and '30s after Lowell's outdated mills could no longer compete against the state-of-the-art cotton mills in other communities" [paragraph 6]).

H. Incorrect. The details about the temporary revival of the mills during World War II do not show why Lowell is no longer considered a "model of industry." The mills were used briefly during wartime because of an increased need for supplies, but this use of the mills was short-lived.

Ode to Fireworks

33. The question asks what the comparison in lines 8–9 of the poem is used to convey.

A. CORRECT. In lines 8–9 the speaker compares the deep thumping noises at the start of a fireworks show to the muffled thumping sound made when beating a rug to clean it. The imagery of "low, dull *thwumps*" (line 8) (onomatopoeia) describes a sound that is not clear or powerful. To the speaker, these low, distant explosions are the signal that the fireworks display is starting and that the loud, cracking sound of fireworks will be heard soon ("Then we counted the seconds between the lightning / and thunder" [lines 10–11]).

B. Incorrect. The comparison in lines 8–9 deals with the low sound of the first fireworks shooting off rather than the streaks of light they emit. To the speaker, the low *thwumps* (onomatopoeia) are the signal that fireworks are about to explode overhead, much like the way a streak of lightning during a storm indicates that a crash of thunder will follow in a few seconds.

C. Incorrect. The *thwump* (onomatopoeia) sounds are the start of the fireworks show, not thunder. As a comparison, the speaker says the initial *thwumps* of the fireworks signal anticipation for the full explosion that will come, much like the way the speaker would watch for lightning and count the seconds before an impending thunderclap (lines 10–11).

D. Incorrect. The muffled *thwump* (onomatopoeia) sounds occur before the dazzling explosion of lights and before sparks start to fall from the sky. The comparison focuses on the sounds of the experience, not the sight of the experience.

---

34. The question asks what the word choice in lines 22–23 of the poem conveys about the speaker.

E. Incorrect. The word "jewels" is used figuratively to indicate the sentimental value that the experience of watching the fireworks holds for the speaker. There is no indication in the poem that the speaker values material possessions.

F. Incorrect. The use of the word "jewels" highlights the importance of the memory in the speaker's mind. The imagery in the words "written upon" expresses the way the bright streaks of light curve and fly across the night sky, not that the speaker views the fireworks display as magical.

G. Incorrect. The speaker describes the elements of the fireworks display that stand out most clearly. The view of the bright, colorful fireworks streaking across the sky is distinct, but it is not unique to the country setting.

H. CORRECT. The word "jewels" creates a picture of watching shining and sparkling explosions in the night sky and suggests that this experience holds sentimental and emotional value for the speaker. The speaker cherishes the memory of the experience.

35. The question asks what the use of italics on the word "*night*" in line 24 is most likely intended to emphasize.

A. Incorrect. The purpose of italicizing the word "*night*" is not to convey mystery. While the speaker refers to not knowing the exact location where the firework viewing took place ("in the stubble of what had been / somebody's cornfield" [lines 25–26]), the emphasis on "*night*" is meant to highlight the darkness and contrast the bright light from the fireworks soaring across the sky.

B. **CORRECT.** The italics are intended to place emphasis on one key aspect of nighttime—total darkness. The speaker is making a point that night in the country was truly dark, unlike the night the speaker currently experiences in a city, where light emitted from buildings and vehicles prevents complete darkness.

C. Incorrect. The tone in the second stanza is positive, showing admiration for the beauty visible in true darkness rather than fear: "But it was another thing to see / the sky at night written upon / with those jewels" (lines 21–23).

D. Incorrect. The speaker is talking about the general experience of watching fireworks on several occasions, not focusing on the events of a specific night. The use of italics on the word "*night*" emphasizes the speaker's memory of the persistent darkness.

---

36. The question asks what the purpose is of the repeated words "rising and falling" in lines 26 and 37.

E. Incorrect. These lines do not provide insight into the speaker's interactions or feelings of solitude. The speaker mentions the emptiness of the country and the crowds in the city, but these repeated words are meant to draw a connection between the locations rather than show differences between them.

F. **CORRECT.** The first mention of these words occurs during a recollection of the speaker's past, and the second takes place during a description of the speaker's present. The speaker looks to the connections between the country setting ("All around us, crickets / stridulated in the stubble of what had been / somebody's cornfield, their song rising and falling" [lines 24–26]) and the city setting ("And the music around me is the music of people, / their voices rising and falling in a hundred languages" [lines 36–37]) as a source of comfort.

G. Incorrect. Even though the lines call out specific sounds, the purpose of the repetition of the words in the two parts of the poem is to show how the speaker connects the two settings. The "rising and falling" of the sounds is one detail the speaker highlights.

H. Incorrect. The repetition of the words "rising and falling" is used to compare the different locations in the speaker's life, not to compare fireworks to the sounds of crickets in the country or to the sounds of people moving and talking in the city.

37. The question asks what impact the phrase "Everything is a constant celebration" (line 33) has in the poem.

A. Incorrect. The speaker describes a sense of happiness and contentment in both the city and the country and does not indicate that one setting is more pleasurable than the other.

B. Incorrect. The word "celebration" has a positive association and does not imply that the speaker is overwhelmed in the city. Throughout the third stanza (lines 28–42), the speaker conveys appreciation for the elements of the city that make it different from the country ("And the music around me is the music of people, / their voices rising and falling in a hundred languages" [lines 36–37]).

C. **CORRECT.** From the speaker's perspective, the constant light ("awash in light" [line 32]) contributes to the speaker's feeling that, in the city, celebratory fireworks are ever present. In comparison, fireworks lit up the country sky only for celebratory occasions or annual events ("In autumn my mother drove us to the edge of the field / where the fair was set up year after year" [lines 1–2]).

D. Incorrect. While the speaker observes many things going on in the city at a given moment, the "constant celebration" in line 33 is intended to convey a comparison to the speaker's previous experience in the country rather than emphasize the hectic pace of life in the city. The continual light and sounds in the city remind the speaker of lights and sounds experienced only on occasion in the country.

---

38. The question asks how the memory in lines 41–42 affects the speaker.

E. Incorrect. The speaker does not express concern in these lines about the impossibility of returning to childhood or the past. For the speaker, the past and the memories associated with it are a source of comfort and a way to remember simpler times ("I remember the feel of the pickup truck bumping / across the ridged field" [lines 40–41]).

F. Incorrect. While the speaker recalls anticipation before the start of a fireworks display, there is no hint that the speaker is impatient. Particularly in lines 41–42, the speaker is reminded of the expectation of hearing and seeing fireworks and the sense of simple contentment felt in the experience ("I find myself / craning my neck upward at odd moments" [lines 29–30]).

G. Incorrect. The speaker is reflecting on past experiences and pointing out the elements of the city that remind the speaker of these past experiences. The speaker acknowledges the differences between the country and city settings but does not convey regret for leaving the rural area ("This is where we live now, / and it is how we live now, awash in light / of every hue" [lines 31–33]).

H. **CORRECT.** The memory of watching the fireworks on the way home creates a sense of comfort that stays with the speaker ("escorted us home"). The speaker looks forward to moments when the youthful experience ("childhood bursts") of being excited by something like a fireworks display can be a source of happiness.

39. The question asks what the fireworks in the poem represent about the speaker.

A. Incorrect. While the speaker misses elements of the past, the speaker is also positive about the present, with comparisons to a "constant celebration" (line 33) and descriptions of "the music of people" (line 36). The speaker does not indicate a desire to return to a simpler way of living.

B. **CORRECT.** The speaker misses the experience of watching the fireworks display with family and friends but understands that time has progressed and that life is now different. The lines "This was a treat we waited / all year for" (lines 6–7) highlight the significance of the memory of waiting for and watching the fireworks. In the speaker's present, the lines "I remember the feel of the pickup truck bumping / across the ridged field" (lines 40–41) emphasize the key details from the experience that stand out in the speaker's mind when something in the current environment reminds the speaker of the past.

C. Incorrect. While the speaker does share details about the present and the tone is generally positive, the fireworks do not suggest that the speaker has high expectations for how everyday life should be. The third stanza (lines 28–42) describes some of the speaker's imaginings about the aspects of going about one's daily life, but the speaker does not form expectations from these fantasies.

D. Incorrect. While the speaker does mention discussing cloud shapes with a family member in lines 19–20, the fireworks serve as a more general reminder of the speaker's past life. Viewing the bright lights of the city makes the speaker recall memories of the speaker's past and the feelings of anticipation before the fireworks show.

Excerpt from *In Search of the Unknown*

40. The question asks how paragraph 2 helps develop the plot.

E. Incorrect. As paragraph 1 indicates, writing such letters is one of the main parts of the narrator's job ("and I was always busy, part of the day, in dictating answers to correspondents"), and he shows no indication of disliking this work. The letters are to inform people whether the zoo will accept their animals.

F. Incorrect. Paragraph 2 indicates that the narrator offers his letters to the professor merely for official approval. At the start of the excerpt, the narrator is confident in his reply and does not anticipate that his response will differ from that of the professor, so he has no need to "predict what the professor would say."

G. **CORRECT.** The phrase "uncompromising refusals" in paragraph 2 indicates the confidence that the narrator initially has in his belief that the animals described in the letters are not of value to the society. This confidence is badly shaken as the plot unfolds, as when Professor Farrago states that " 'I am daring to believe that it *is* the great auk itself' " (paragraph 23). The narrator's transition from an attitude of dismissive doubt to one of budding hopefulness is a major part of the plot ("But I was not shocked; on the contrary, I was conscious that the same strange hope that Professor Farrago cherished was beginning, in spite of me, to stir my pulses, too" [paragraph 34]).

H. Incorrect. The narrator does not resent the professor's review of the letters; instead, the phrase "of course" in paragraph 2 shows that he expects to submit the letters to the professor as part of his job.

41. The question asks what the phrase "a faint trace of apology" in paragraph 3 conveys about the professor.

A. Incorrect. The fact that the narrator had intended to leave the office for the day is not the source of the professor's faintly apologetic manner, which is instead caused by the professor's understanding that their conversation about the letter and the expedition is likely to cause an argument ("with a whimsical smile that suggested amusement, impatience, annoyance" [paragraph 3]). In paragraph 29, the professor asks the narrator if he can leave on an expedition that same evening, which indicates that the professor does not feel bad about taking up the narrator's time after work.

B. Incorrect. The paragraphs that follow the sentence from paragraph 3 show the professor sharing his opinions without pause, even when his opinion of the narrator is unflattering (" 'Like swimming squirrels, you navigate with the help of Heaven and a stiff breeze, but you never land where you hope to—do you?' " [paragraph 17]).

C. Incorrect. The professor knows that the narrator will push back regarding the letter, but the professor is not uncomfortable challenging the narrator. Professor Farrago seems perfectly at ease and comfortable as he begins the discussion with the narrator.

D. **CORRECT.** The professor is both amused and annoyed by the narrator's dismissal of the possibility that great auks still exist, and the professor knows that the narrator is likely to react negatively to being sent on what the narrator considers a "fool's errand" (paragraph 25).

---

42. The question asks how the exchange between the professor and the narrator in paragraphs 8–11 contributes to the development of the characters.

E. **CORRECT.** Paragraphs 8–11 help develop the characters by revealing the difference between the opinions of the narrator and the professor. The narrator believes without any doubts that Halyard, the man who wrote the letter about the auks, is either " 'a liar or a fool' " (paragraph 9), while the professor believes in the possibility that the writer of the letter could actually be telling the truth ("I said as much to Professor Farrago, but, to my surprise, he appeared to waver." [paragraph 8]).

F. Incorrect. In paragraph 8, the narrator reacts to the letter writer with "a contemptuous tolerance," and he is shocked to learn that the professor actually agrees with the man (paragraph 11) whom the narrator has bluntly condemned as a liar or a fool (" 'In my opinion,' said I, 'he's one or the other.' " [paragraph 10]). The exchange presents an emphatic disagreement between the narrator and the professor, and it does not show them working together in a collaborative manner.

G. Incorrect. Although the narrator initially distrusts the contents of the letter and shows "contemptuous tolerance for the writer" (paragraph 8), the excerpt portrays the professor as experienced and intelligent, not as one who is easily deceived.

H. Incorrect. While the narrator does begin to consider the professor's perspective at the end of the excerpt, paragraphs 8–11 primarily serve to establish the difference of opinion between the narrator and the professor about the writer of the letter.

43. The question asks how the professor's observations in paragraphs 15–17 create tension in the excerpt.

A. CORRECT. The professor criticizes " 'you young fellows' " (paragraph 15), suggesting that the ideas of young scientists like the narrator are unsupported (" 'like swimming squirrels,' " [paragraph 17]) and inaccurate (" 'but you never land where you hope to—do you?' " [paragraph 17]; " 'you embark on a theory for destinations that don't exist' " [paragraph 15]). The narrator then becomes "red in the face" (paragraph 18), indicating that the narrator is upset by the professor's criticism, and asks the professor about the great auk in an attempt to defend himself.

B. Incorrect. While the narrator does experience a negative reaction to the professor's words, the professor is being genuine, not sarcastic. In fact, the sarcasm comes from the narrator in paragraph 14 (" 'It is generally accepted,' I replied, sarcastically, 'that the great auk has been extinct for years. Therefore I may be pardoned for doubting that our correspondent possesses a pair of them alive' "), not from the professor.

C. Incorrect. The professor's observations cause the narrator to blush with embarrassment ("rather red in the face" [paragraph 18]), but the narrator understands the point that the professor is making about the narrator's acceptance of the idea that great auks do not exist. The narrator recognizes that the professor is criticizing his youthful ideas, not his opinion.

D. Incorrect. The professor shows amusement with the narrator's perspective. The narrator is embarrassed and upset by the professor's words, but the narrator does not display frustration with the professor's lack of interest in a commonly held view of the existence of a certain species of bird.

---

44. The question asks how the interaction between the narrator and the professor in paragraphs 26–28 contributes to the development of the theme.

E. Incorrect. Paragraphs 26–28 do not show the narrator arguing against making the expedition. He instead argues that it is unnecessary for the professor to pay to send extra men on the expedition. The narrator points out that he can ask for assistance if he does, in fact, find great auks (" 'None,' I replied, bluntly; 'it's a useless expense, unless there is something to bring back. If there is I'll wire you, you may be sure' " [paragraph 28]).

F. Incorrect. When the professor criticizes the narrator's blind acceptance of the theory about the existence of the auks, the narrator is frustrated and embarrassed. This frustration does not stem from his inability to make decisions for the zoological society.

G. Incorrect. The professor states that " 'what I want you to do is to get those birds here safely' " (paragraph 27), which indicates that his main priority is the birds' safety rather than acquiring specimens regardless of the consequences (i.e., at any cost).

H. CORRECT. Paragraph 26 describes the professor and the narrator making practical plans for the expedition ("we made out a list of articles necessary for me and itemized the expenses I might incur"), indicating the narrator's acceptance of his assignment while also revealing that he does not anticipate a "successful termination to the expedition." Paragraph 28 further describes the personal objections of the narrator, who believes that adding extra men to the expedition is pointless (" 'a useless expense' "), since he does not expect to find any great auks to bring back.

45. The question asks which sentence from the excerpt best explains why the professor is eager to send the narrator on an expedition.

A. Incorrect. In the sentence from paragraph 25, the narrator suspects the professor is losing his ability to reason because his request (to secure the great auk for the society) seems impossible. The professor is excited about the discovery, but the narrator doubts whether the discovery is real. The sentence does not explain why the professor is excited, however.

B. Incorrect. Paragraph 26 shows the professor and the narrator planning the logistics of the trip, but it does not explain why the professor is eager to send the narrator on the expedition.

C. Incorrect. Although the sentence from paragraph 27 expresses the professor's interest in having the narrator bring the birds back safely, it does not show the underlying reason why the safety of the birds is so crucial, which is that the great auk is extremely rare.

D. **CORRECT.** The sentence from paragraph 33 reveals the professor's excitement to get " 'the rarest of living creatures,' " the great auk. In paragraph 14, the narrator states that "it is generally accepted . . . that the great auk has been extinct for years," which would make a living auk incredibly rare and explains the professor's eagerness for the narrator to go on the expedition.

---

46. The question asks how paragraph 34 helps develop the plot of the excerpt.

E. **CORRECT.** Despite his initial disbelief, the narrator admits in paragraph 34 that he is starting to feel the "same strange hope" the professor feels, which is to find the great auks (paragraph 33).

F. Incorrect. While the narrator does make an effort in paragraphs 11–22 to understand the professor's thinking, paragraph 34 reveals that the narrator has been affected by the professor's "strange hope" for the auks and is beginning to share this hope "in spite of" himself.

G. Incorrect. The narrator describes a feeling of hope in paragraph 34 that would not be present if he had simply been overruled by the professor and did not share any of the professor's belief in the possibility that the auks exist. In addition, it was established before paragraph 34 that the narrator was willing to be overruled ("I drew a chair up beside his desk—there was nothing to do but to obey, and this fool's errand was none of my conceiving" [paragraph 25]).

H. Incorrect. The narrator does not express a sense of urgency in paragraph 34 to complete the expedition. Instead, he expresses hope that the great auks might really exist.

47. The question asks which sentence best demonstrates the professional relationship between the narrator and the professor.

A. Incorrect. Although the professor's handing of the paper to the narrator indicates that they are beginning to discuss the letter about the great auk, the sentence from paragraph 4 does not convey the relationship between a subordinate employee (the narrator) and a superior (the professor).

B. Incorrect. The sentence from paragraph 24 presents the narrator's immediate internal reaction to the professor's words. The sentence emphasizes that the professor's belief in the great auk's existence is so outrageous that the narrator initially thinks the professor is starting to lose touch with reality. This is a momentary reaction to the professor's words, not a demonstration of the professional relationship between the two.

C. **CORRECT.** The sentence from paragraph 25 reveals that while the narrator disagrees with the professor ("this fool's errand was none of my conceiving"), he obeys because he works for the professor ("there was nothing to do but to obey").

D. Incorrect. The professor's good-humored offer of assistance in the sentence from paragraph 29 does not best demonstrate the underlying employer-employee relationship between the professor and the narrator. The narrator has to go on the expedition because the professor, his boss, told him to.

---

48. The question asks how the author develops the contrast between the narrator's point of view and the professor's point of view.

E. Incorrect. The excerpt does not describe the narrator's thoughts about how age and experience influence the professor's reasoning in enough detail to fully contrast them against the thoughts about the narrator that the professor expresses in paragraphs 15–17. The narrator's idea that the professor might be "on the verge of dotage" (paragraph 24) is meant in a humorous way.

F. **CORRECT.** The primary conflict of the excerpt revolves around the narrator's disagreement with the professor about whether the letter about the great auks could be true. As the two men converse, their contrasting attitudes toward the letter become clear: the narrator dismisses the possibility of great auks out of hand (" 'of course the man is mistaken' " [paragraph 5]; " 'here is a man . . . who wants you to send somebody to take charge of a bird that doesn't exist!' " [paragraph 12]), while the professor calmly admits that although " 'nine hundred and ninety-nine men in a thousand would throw that letter aside and condemn the writer' " (paragraph 9), he himself believes that the writer could be telling the truth (" 'How do you know,' asked Professor Farrago, 'that the bird in question does not exist?' " [paragraph 13]).

G. Incorrect. The professor explains why he disagrees with the narrator (paragraphs 19–21), but he does not make persistent efforts to convince the narrator to change his mind about the letter. Instead he states that the narrator will go on an expedition to retrieve " 'whatever it is that our correspondent has' " (paragraph 23), thereby requiring the narrator to go collect the great auks whether the narrator believes in them or not.

H. Incorrect. The point of the dialogue is not to explain the subordinate-supervisor relationship between the narrator and the professor but rather to contrast what each character believes about the contents of the letter.

Excerpt from "Research Riddle Resolved"

49. The question asks how the sentence from paragraph 2 contributes to the overall structure of the excerpt.

A. Incorrect. While the sentence from paragraph 2 does mention the platypus's unique appearance, the remainder of the excerpt does not focus on the physiology of the platypus but instead focuses on the significance of scientists' platypus research and what it can "tell us about people" (paragraph 4).

B. Incorrect. Paragraph 1 discusses the platypus as the "duck-billed" animal that "still captures our imagination anew and irresistibly attracts the attention of science writers everywhere," but highlighting the idea that the platypus's unusual appearance has attracted scientists' attention is not how the sentence from paragraph 2 fits into the overall structure of the excerpt.

C. Incorrect. Paragraph 1 states that "the May 2008 *Nature* report detailing the DNA insides of the duckbilled platypus invited colorful tales from just about every mainstream media outlet," but it does not discuss current ideas in the field. Paragraph 2 focuses on the "scientific surprise" of the platypus.

D. **CORRECT.** The sentence from paragraph 2 serves as a transition from the introductory idea that "the animal still captures our imagination anew and irresistibly attracts the attention of science writers everywhere" (paragraph 1) to the central idea that the platypus has great scientific significance.

---

50. The question asks what the phrase "evolutionary DNA tapestry" in paragraph 3 conveys about the platypus.

E. **CORRECT.** In the excerpt, the term "tapestry" conveys the sense of a rich history; the "platypus heritage" described in paragraph 3 is woven together with "threads" from mammals, birds, and reptiles in its genetic background.

F. Incorrect. While paragraph 3 does mention mammals and reptiles, it does not discuss when the platypus developed traits from those classifications. Rather, it refers in general to "hundreds of millions of years ago, when reptiles and mammals branched off the evolutionary tree."

G. Incorrect. The excerpt never claims that, compared with other animals, the platypus is the best resource for studying the evolution of animal genomes. The excerpt indicates that the platypus's status as a "scientific oddity" provides "a window into a time in history when mammals became unique—gaining the ability to bear live young, produce milk for them, and grow a warm, furry coat" (paragraph 6).

H. Incorrect. The excerpt states that the platypus genome is a "scientific oddity" (paragraph 6) that is useful to researchers, but the reason it is useful is because of DNA evidence that shows "a window into a time in history when mammals became unique" (paragraph 6), not because its genes have never been altered. Because the platypus genome, like that of all animals, has evolved over time, the statement that platypus genes have never been altered is inaccurate ("They learned that the platypus lost most of its genetic ability to produce egg yolk—as compared to chicken genes. This suggests its departure from 'chicken-ness' " [paragraph 12]).

51. The question asks how paragraphs 4–6 contribute to the development of ideas in the excerpt.

A. Incorrect. Although paragraph 6 states that the "platypus genome results are far more than confirmation of a scientific oddity," the paragraphs do not summarize the evidence that the platypus is an evolutionary peculiarity, an idea which is primarily described in paragraphs 12–14. Rather, paragraphs 4–6 indicate why researchers are interested in platypus genetics as a way to deepen their understanding of humans and other mammals.

B. Incorrect. Although the paragraphs suggest that research on platypus DNA can provide useful information about humans ("what can its DNA tell us about people and the diseases we get?" [paragraph 4]; "Plenty, says an international team of scientists who did this work" [paragraph 5]), they do not provide a transition to the study of the human genome. Instead, they explain that researchers are interested in the genetic material of the platypus because it helps them understand the evolutionary development of mammals ("The platypus genome results . . . provide researchers a window into a time in history when mammals became unique" [paragraph 6]). Mammals are a group that includes humans and many other species, and the researchers are interested in learning more about the evolutionary development of the larger group (mammals), not a single species of mammal (humans).

C. Incorrect. Although paragraph 6 refers to unique features of mammal species ("the ability to bear live young, produce milk for them, and grow a warm, furry coat"), the paragraphs primarily focus on the scientific relevance of the platypus genome results and do not highlight the idea that mammals are a diverse group with some similarities.

D. **CORRECT.** The paragraphs explain why the genetic material of the platypus (or their "genome results" [paragraph 6]) are interesting to scientists who study mammals, a group that includes human beings. Paragraph 4 asks "what can [platypus] DNA tell us about people and the diseases we get?" Paragraphs 5 and 6 answer the question posed in paragraph 4, stating that scientists believe we can learn "plenty" from platypus DNA because it provides researchers "a window into a time in history when mammals became unique—gaining the ability to bear live young, produce milk for them, and grow a warm, furry coat."

---

52. The question asks how paragraph 8 fits into the overall structure of the excerpt.

E. **CORRECT.** Paragraph 8 acts as a transition from the discussion of how "our own, modern-day genomes are still a big mystery" (paragraph 7) to the discussion of how scientists use comparative genomics to compare "human genes with those from animals" (paragraph 8).

F. Incorrect. Paragraph 8 describes scientists' primary interest in understanding the genetic evolution of humans, not animals, by comparing "human genes with those from animals." The paragraph does not clarify or provide details about how scientists study gradual changes in the genetic material of a given animal species.

G. Incorrect. Rather than contrasting the effort of the study of the human genome with the effort of a separate study of animal genomes, paragraph 8 discusses a study that is comparing human and animal genomes "to see what has been kept the same and what has evolved to be different."

H. Incorrect. While the mention in paragraph 8 of "3 billion DNA 'letters' " certainly highlights the enormous challenge of fully analyzing the human genome, the point of paragraph 8 is to transition the excerpt to the topic of how comparative genomics can shed light on the human genome.

53. The question asks for the best summary of the section "Same and Different" (paragraphs 9–11).

A. Incorrect. The fact that the platypus is the latest species whose genome is being compared with the human genome is just a detail of this section. The focus of the section is on the fact that comparing genomes can teach us about human diseases. Paragraph 9 reveals this when it states that "scientists compare the genome sequences of several species: human, mouse, and a wide variety of other organisms from single-celled fungi to elephants and, now, the platypus."

B. Incorrect. While comparative genomics is a way to examine many different species, this detail is not the main point of this section. Paragraph 10 notes that the "goal of this research" focuses on the fact that comparing genomes can teach us about human diseases.

C. **CORRECT.** This sentence describes the most important idea of the section: the discovery of genes that humans have in common with other species that can yield information about human diseases. As stated in paragraph 10, "The goal of this research is to find regions of similarity and difference in order to better understand the structure and function of human genes."

D. Incorrect. While this section does mention the use of computers in comparative genomics, this information is a detail about how the research is carried out; the computers are a tool in discovering whether "this information may translate into ways to understand, treat, and prevent human diseases" (paragraph 11).

---

54. The question asks how the details in paragraphs 12–14 about the platypus's different abilities convey a central idea of the excerpt.

E. Incorrect. The fact that "platypuses have genes that make the milk protein casein" (paragraph 13) just like humans do is an important supporting detail, but it is not a central idea of the excerpt.

F. Incorrect. While paragraph 14 explains that the platypus produces venom "like its ancestral snake and lizard cousins," which suggests the platypus has the ability to defend itself, this information is a supporting detail and not a central idea of the excerpt.

G. Incorrect. Paragraphs 12–14 do state that the platypus has lost some of its "chicken-ness" (paragraph 12) while gaining traits in common with mammals and reptiles, but this information is a supporting detail and not a central idea of the excerpt.

H. **CORRECT.** In describing the platypus's different abilities, paragraph 12 states that "the findings traced the evolutionary path from birds and reptiles to mammals." Paragraphs 12–14 elaborate on the findings to support a central idea of the excerpt, which is that the platypus is rare in having bird, reptile, and mammal DNA.

55. The question asks which sentence from the excerpt best supports the idea that the same DNA material results in the same traits even in different classes of animals.

A. Incorrect. The sentence from paragraph 2 describes the combination of DNA material from several classes of animals that makes up platypus DNA; however, the sentence does not address whether any of those different animals share traits or whether they share some of the same DNA.

B. Incorrect. The sentence from paragraph 3 emphasizes the relationship between two different classes of animals—reptiles and mammals—by discussing when they branched off the same evolutionary tree. However, the sentence does not address whether those classes of animals share any traits.

C. Incorrect. The sentence from paragraph 4 questions whether platypus DNA can teach people something about humans and human disease, which implies that there must be something in common between these two animals. However, it does not state that these two animals actually share traits or DNA.

D. CORRECT. The sentence from paragraph 14 describes two different classes of animals—reptiles and monotremes—that have the ability to create venom, a trait that resulted from the same DNA material "mixed and matched together."

---

56. The question asks how researching the genomes of other animals can inform scientists' understanding of human health and disease.

E. Incorrect. Although tracking how other animals evolved helps researchers better understand our "rich and diverse planet" (paragraph 18) through understanding genes, the potential benefits to human health will not necessarily preserve or sustain nature.

F. CORRECT. Paragraph 11 explains that finding ways that animal genomes are similar to the human genome helps researchers "locate signals that control how genes work."

G. Incorrect. While paragraph 11 does point out that all living things share an ancestor, the idea that they, therefore, share genetic traits is only implied. This idea does not contribute to the main focus of the research.

H. Incorrect. The statement that "understanding how other animals are similar to one another helps researchers understand how humans evolved" is too general to provide support for the main focus of the genetic research described in the excerpt. To learn more about human health and disease, scientists need to understand the similarities between the genetic material of different animal species. These scientists are interested in learning more about issues that currently affect humans, not understanding their evolutionary history.

57. The question asks how the author elaborates on the idea that creating a full analysis of platypus DNA was an important scientific endeavor.

A. **CORRECT.** The importance of the research into platypus DNA is explained in the excerpt through descriptions of what this research can teach us about human genetics and disease. The question is raised directly in paragraph 4 and begins to be answered in paragraph 6 (“The platypus genome results . . . provide researchers a window into a time in history when mammals became unique—gaining the ability to bear live young, produce milk for them, and grow a warm, furry coat”). This importance is also addressed in the “Same and Different” section (paragraphs 9–11) and in paragraphs 15 and 16.

B. Incorrect. The comparison of the platypus with its bird and reptile relatives in paragraphs 12–15 is important to locating the platypus on its evolutionary family tree and in showing the connection between DNA and functionality. This comparison does not, however, explain the excerpt’s main reason for asserting that the analysis of platypus DNA was an important scientific endeavor.

C. Incorrect. Although the excerpt mentions that part of the platypus's appeal is its "cuteness and weirdness" (paragraph 2) and describes it as having a "patchwork of genes" (paragraph 2), the scientific importance of analyzing the platypus genome is not derived from its unusualness but rather from its ability to shed light on the human genome through comparative genomics ("One thing is clear—the stunning blend of reptile, bird, and mammal puts the platypus in a class of its own, and it gives researchers much more: information about how mammals like us came about" [paragraph 17]).

D. Incorrect. The excerpt briefly explains the connection between genes and some of the platypus's physiological functions, such as producing milk and venom (paragraphs 13 and 14). Although paragraph 15 mentions the scientific value of understanding these genetic connections ("Such investigations may help medical researchers understand health issues related to reproduction and lactation"), paragraph 16 indicates that there is even greater value in studying the platypus genome through comparative genomics ("More generally, though, studying how nature cuts and pastes gene modules gives scientists an inside scoop on how genetic changes relate to health and disease risk"). The full analysis of the platypus DNA was an important scientific endeavor primarily because it furthers the ability of scientists to understand "millions of years of evolution" and offers "vital information to understanding the role of genes in the health and disease of mammals like us" (paragraph 18). The discussion of physiological function itself is not the real importance of the scientific endeavor.

58. **(162)** To find angle x, first find the measure of angle PQR by finding the measure of angle PSR.

$m\angle PSR = m\angle PQR$
$m\angle PSR = 180 - 72$
$m\angle PSR = 108$

The measure of angle PQR is also 108.

Find the measure of angle x:

$108 + 90 + x = 360$
$198 + x = 360$
$x = 162$

---

59. **(99)** Let x be the number of oak trees when 264 pine trees are planted.

Set up a proportion and solve for x:

$$\frac{x}{264} = \frac{3}{8}$$
$8x = 762$
$x = 99$

---

60. **(-4)** $4w = 2w - 8$
$2w = -8$
$w = -4$

61. **(45)** Let x = number of students with only cats as pets. Let y = number of students with only dogs as pets.

Calculate x and y using the given information:

There are 20 students who have cats, and of those 20 students, 3 have both cats and dogs.

If 3 out of 20 students also have dogs, then $x = 20 - 3 = 17$

There are 23 students who have dogs, and of those 23 students, 3 have both cats and dogs.

If 3 out of 23 students also have cats, then $y = 23 - 3 = 20$

To find the total number of students surveyed, add the number of students who only have cats (x), the number of students who only have dogs (y), the number of students who have both (3), and the number of students who have neither (5):

$3 + 5 + x + y = 8 + 17 + 20 = 45$

62. **(63)** If x is the smaller consecutive integer, then $x+1$ is the larger consecutive integer. Use their sum (-15) to find x:

$x + (x+1) = -15$

$2x + 1 = -15$

$2x = -16$

$x = -8$

The two consecutive integers are -8 and -7.

One is added to the smaller integer: $-8 + 1 = -7$, and 2 is subtracted from the larger integer: $-7 - 2 = -9$.

Find the product: $-7 \times -9 = 63$

---

63. **(B)** $2k = m + 3$ so $k = \frac{m+3}{2}$.

Substitute each value of m to find the values of k:

$k = \frac{5+3}{2} = \frac{8}{2} = 4$

$k = \frac{7+3}{2} = \frac{10}{2} = 5$

$k = \frac{9+3}{2} = \frac{12}{2} = 6$

The set k is $\{4, 5, 6\}$.

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

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

$5 - n$

---

65. **(A)** The sum of Adrianna's course grades equals 4 times the mean (average) of her grades:

$90 \times 4 = 360$

Roberto has the same sum (360) as Adrianna. Find the mean of his course grades:

$360 \div 5 = 72$

66. **(H)** Set up some equations.

Jenny (J) has twice as many marbles as Keiko (K): $J = 2K$

Jenny gives Keiko 5 marbles, so now they each have: $J - 5$ and $K + 5$ marbles.

Jenny still has 10 more than Keiko:
$J - 5 = (K + 5) + 10$

To find how many marbles Jenny had to start with, solve $J = 2K$ for K and substitute that into the second equation:

In equation $J = 2K$, solve for K: $K = \frac{J}{2}$

Substitute $\frac{J}{2}$ in for K.

$J - 5 = (K + 5) + 10$
$J - 5 = \left(\frac{J}{2} + 5\right) + 10$
$J - 5 = \frac{J}{2} + 15$
$J = \frac{J}{2} + 20$
$\frac{J}{2} = 20$
$J = 40$ marbles

$J = 40$ marbles

67. **(A)** Let x be the number of inches representing 1 foot. Set up a proportion and solve for x:

$\frac{x}{1} = \frac{0.125}{125}$
$x = 0.001$ in.

68. **(G)** To find the percentage of cars that contain at least 3 people, add the percentage of cars containing 3 people, 4 people, and 5 or more people:

$15\% + 7\% + 3\% = 25\%$

Thus, 25% of the cars contained **at least** 3 people. Use 25% to calculate the number of cars with at least 3 people.

$420 \times 0.25 = 105$ cars.

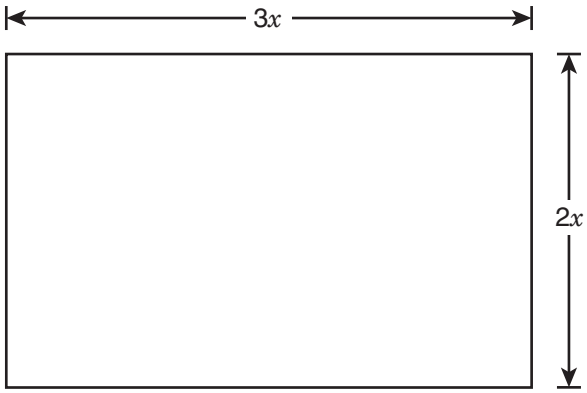
69. **(B)** Line segment $\overline{RS}$ is the altitude, or height, of triangle QRP. The length of $\overline{QP}$ is 8 cm.

Use the information to find the area of triangle QRP:

$A = \frac{1}{2}bh = \frac{1}{2}(8)(6) = 24$ sq cm.

There are 4 congruent triangles in the pyramid, so the surface area of the pyramid **excluding** the base is
$4 \times 24 = 96$ sq cm.

70. **(F)** Let $2x$ = the width and $3x$ = the length. Draw the rectangle to help visualize.



Since 2 times width + 2 times length = perimeter, we get

$2(2x) + 2(3x) = 510$

$4x + 6x = 510$

$10x + 510$

$x = 51$

$2x = 102$ cm and $3x = 153$ cm

71. **(D)** Multiply each term by 2 to eliminate the fraction, and isolate x:

$$-4(2) < \left(\frac{x}{2}\right)(2) < 2(2)$$

$-8 < x < 4$

Therefore, x must be between -8 and 4.

72. **(H)** Since both ratios have y in common, solve for x and z in terms of y in both equations.

Using $y{:}x = 1{:}4$, solve for x in terms of y.

$$\frac{x}{y} = \frac{1}{4}$$

$$x = \frac{1}{4}y$$

Using the ratio $y{:}z = 4{:}5$, solve for z in terms of y:

$$\frac{y}{z} = \frac{4}{5}$$

$$z = \frac{5}{4}y$$

The question states $x + y + z = 50$. Substitute from the two equations above and solve for y.

$$\frac{1}{4}y + y + \frac{5}{4}y = 50$$

$$\frac{10}{4}y = 50$$

$10y = 200$

$y = 20$

73. **(B)** Let x be the total number of colored pencils in the box.

Set up a proportion to find x :

$$\frac{2}{7} = \frac{6}{x}$$
$$2x = 42$$
$$x = 21$$

If there are 6 red pencils, then the number of pencils that are not red is $21 - 6 = 15$.

---

74. **(F)** Use proportions to make the conversions:

Lorgs to dollars:

$$\frac{140}{x} = \frac{7}{1}$$
$$7x = 140$$
$$x = \$20$$

Dalts to dollars:

$$\frac{16}{x} = \frac{0.5}{1}$$
$$0.5x = 16$$
$$x = \$32$$

Total dollars $= 20 + 32 = \$52$

75. **(B)** The shaded region is a right triangle. Each leg is 1 unit in length.

So the area is $A = \frac{1}{2}bh = \frac{1}{2}(1)(1) = \frac{1}{2}$ or 0.5 sq unit

---

76. **(F)** Create a table with the information provided in the problem and use subtraction to fill in the rest of the table:

	Female	**Male**	**TOTAL**
Commutes to work	21%	**39% (60 - 21)**	60%
Does not commute to work	**24% (41 - 21)**	**16% (40 - 24)**	**40% (100 - 60)**
TOTAL	45%		100%

16% of the population is male and does not commute to work.

---

77. **(A)** Let x be the price per pound for the meat. Set up an equation to show what Mrs. Cranston spent:

$$5(0.90) + 8x = 26.90$$
$$4.50 + 8x = 26.90$$
$$8x = 22.40$$
$$x = 2.80$$

The price per pound for the meat is \$2.80

78. **(E)** The probability that both cards are not blue is the same as the probability that both cards **are** red.

There are 4 red cards out of the 10, so the probability of the first card being red is $\frac{4}{10}$.

Now there are 9 cards left, and 3 of those are red, so the probability of the second card being red is $\frac{3}{9}$.

Multiply the two probabilities to find the probability that both cards are red (not blue):

$$\frac{4}{10} \times \frac{3}{9} = \frac{12}{90} = \frac{2}{15}$$

---

79. **(D)** 1 sind = 4 lorgs, so 1 sind > 1 lorg.

2 harps = 5 sinds, so 1 harp > 1 sind.

1 plunk = 3 harps, so 1 plunk > 1 harp, meaning that 1 plunk > 1 sind and 1 lorg.

2 plunks = 5 dalts, so 1 plunk > 1 dalt.

Therefore, the plunk is the most valuable.

80. **(F)** Let x be the number of second-, third-, and fourth-year students. Then the total number of students in the college is $663 + x$

Set up a proportion and solve for x:

$$\frac{15}{1} = \frac{663 + x}{179}$$
$$663 + x = 179(15)$$
$$663 + x = 2{,}685$$
$$x = 2{,}022$$

---

81. **(B)** According to the chart, 22% of people walk to work and 4% ride a bicycle.

Subtract to find the percentage of how many more people walk than bicycle:

$$22\% - 4\% = 18\%$$

To find the exact number of people, multiply 18% (0.18) by the number of people working in Center City (15,000):

$$15{,}000 \times 0.18 = 2{,}700$$

---

82. **(F)** To find the smallest factor of 91, list the factors: 1, 7, 13, and 91.

The smallest factor (other than 1) is 7.

Of the options listed (30, 35, 39, and 44), only 35 is a multiple of 7.

83. **(D)** Let x be the remaining side of the actual banner.

Set up a proportion:

$$\frac{x}{16} = \frac{36}{12}$$

$x = 48$ ft

---

84. **(G)** For each row, multiply the number of students by the score.

Add the products together and divide by the total number of students to find the mean (average) of the 10 students.

$$\frac{85(4) + 75(4) + 65(2)}{10} = \frac{340 + 300 + 130}{10}$$

$$= \frac{770}{10} = 77$$

85. **(C)** The first integer is l, so the second is $l + 1$, the third is $l + 2$, then $l + 3$, and finally $l + 4$.

Since g is the fifth and greatest of the integers, $g = l + 4$

Substitute $l + 4$ for g and simplify:

$$\frac{l + g}{2} = \frac{l + l + 4}{2} = \frac{2l + 4}{2} = l + 2$$

---

86. **(F)** Divide the rate by the number of seconds in an hour. (Find the number of seconds in an hour. There are 60 minutes in an hour and 60 seconds in a minute: $60 \times 60 = 3{,}600$ seconds in an hour.):

$\frac{55}{3{,}600}$ miles per second

Multiply by the number of feet in a mile (5,280):

$\frac{55 \times 5{,}280}{3{,}600}$ feet per second

87. **(D)** Set up an equation to express Tien's age (T) and Jordan's age (J) today:

$$T = \frac{1}{4}J$$

Two years from now, Tien's age will be $T + 2$ and Jordan's age will be $J + 2$ Set up an equation about the relationship between Tien's age and Jordan's age in two years:

$$T + 2 = \frac{1}{3}(J + 2)$$

Solve the above equation for T:

$$T = \frac{1}{3}(J + 2) - 2$$

Now set the two equations equal to each other and solve for J:

$$\frac{1}{4}J = \frac{1}{3}(J + 2) - 2$$
$$\frac{1}{4}J = \frac{1}{3}J - \frac{4}{3}$$
$$-\frac{1}{12}J = -\frac{4}{3}$$
$$J = -\frac{4}{3}\left(-\frac{12}{1}\right)$$
$$J = 16$$

88. **(E)** List the factors of 48:

1 and 48, 2 and 24, 3 and 16, 4 and 12, 6 and 8

There are no factors greater than 24 and less than 48.

---

89. **(D)** $2\frac{1}{5} + 3\frac{3}{10} + 4\frac{2}{5} + 5\frac{1}{2}$

Convert all the fractions to a common denominator (10):

$$2\frac{2}{10} + 3\frac{3}{10} + 4\frac{4}{10} + 5\frac{5}{10}$$
$$= (2 + 3 + 4 + 5) + \left(\frac{2 + 3 + 4 + 5}{10}\right)$$
$$= 14 + 1\frac{4}{10} = 15\frac{2}{5}$$

---

90. **(G)** The length of the stick must be the greatest common factor of 72 and 30. The factors of 30 are 1, 2, 3, 5, 6, 10, 15, and 30. Of those, only 1, 2, 3, and 6 are also factors of 72. The greatest of these is 6.

91. **(B)** Create a list of the possible pairs. Let the cookies be named A, B, C, D, E, and F.

AB, AC, AD, AE, AF

BC, BD, BE, BF

CD, CE, CF

DE, DF

EF

There are a total of 15 possible pairs of cookies that Aiden can choose.

92. **(G)** Set up proportions to figure out how many slides Deion and Kyra can create in 1 hour:

Deion

$$\frac{5}{20} = \frac{x}{60}$$
$$20x = 300$$
$$x = 15$$

Deion can create 15 slides in 1 hour.

Kyra

$$\frac{3}{10} = \frac{x}{60}$$
$$10x = 180$$
$$x = 18$$

Kyra can create 18 slides in 1 hour.

Add Deion and Kyra to figure out how many slides they can create together in 1 hour:

$$15 + 18 = 33$$

---

93. **(C)** Since $LN = \frac{1}{8}$, point N is located at $4\frac{5}{16} + \frac{1}{8} = 4\frac{7}{16}$.

So M must be between point L, $4\frac{5}{16}$, and point N, $4\frac{7}{16}$.

Point L can also be written as 4.3125, and point N can be written as 4.4375.

The only option given that lies between those two points is 4.35.

94. **(H)** Three years is 36 months (12×3). Set up an expression to find the total amount Johan paid:

$$1{,}000 + 300(36) = \$11{,}800$$

---

95. **(B)** Ryan has 130 pages left to read ($150 - 20$). He read 20 pages in 30 minutes, which means he read at a rate of 40 pages per 1 hour. To find out how much longer it will take him to finish the assignment, divide the total number of pages remaining (130) by the number of pages he is able to read per hour (40):

$$\frac{130}{40} = 3\frac{1}{4}$$

---

96. **(G)** It is easier to rewrite $\frac{M}{N}$ as $M \div N$ since they are both fractions.

$$M \div N = \frac{w}{x} \div \frac{y}{z} = \frac{w}{x} \times \frac{z}{y} = \frac{wz}{xy}$$

97. **(B)** The question asks for integers from 12 to 30 that are not divisible by 2 or 3.

The set of consecutive integers is {12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30}.

Since all even numbers are divisible by 2, eliminate all even numbers, leaving the odd numbers in the set: {13, 15, 17, 19, 21, 23, 25, 27, 29}.

Eliminate those integers that are multiples of 3 (15, 21, and 27). The remaining integers are: {13, 17, 19, 23, 25, 29}. Therefore, there are 6 numbers in the set that are multiples of **neither** 2 nor 3.

---

98. **(F)** Since $3n$ is even, then $3n + 1$ must be odd. If $3n + 1$ is odd, then $3n + 3$ and $3n + 5$ are also odd. So there are a total of 3 numbers in this range that are odd.

99. **(C)** The total number of candies in the box is $5 + 3 + 2 = 10$. The number of candies that are not banana is $5 + 2 = 7$.

The probability of the first candy not being banana is $\frac{7}{10}$. Now, out of 9 candies, there are 6 candies left that are not banana. The probability of the second candy not being banana is $\frac{6}{9}$. Multiply these two probabilities to get the solution:

$$\frac{7}{10} \times \frac{6}{9} = \frac{42}{90} = \frac{7}{15}$$

---

100. **(H)** Solve the equation for z:

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

$$wz = xy$$

$$z = \frac{xy}{w}$$

101. **(C)** Convert the ratios into fractions of WZ. Use the sum of the ratios for the denominator.

WX:XY:YZ = 4:2:3

$$WX = \frac{4}{4 + 2 + 3} = \frac{4}{9}$$

$$XY = \frac{2}{4 + 2 + 3} = \frac{2}{9}$$

The part of WZ that is WY is the sum of those fractions:

$$WY = \frac{4}{9} + \frac{2}{9} = \frac{6}{9} = \frac{2}{3}$$

Find the length of WZ:

$$WZ = 8 - (-10) = 18$$

The value of WY is $\frac{2}{3}(18) = 12$.

---

102. **(G)** Find 1% of 0.02:

$$0.02 \times \frac{1}{100} = 0.0002$$

The greatest allowable thickness would be $0.02 + 0.0002 = 0.0202$ inch.

103. (D) Calculate the highest score for each section by adding the lowest score to the range:

Section I: 65 + 28 = 93

Section II: 62 + 25 = 87

Section III: 67 + 22 = 89

The overall highest score is 93, and the overall lowest score is 62.

Subtract the lowest score from the highest score to find the overall range: 93 - 62 = 31

---

104. (G) Take each city's number of schools and multiply by the number of students. It is not necessary to calculate all 5 of these. Cities M and N have the same number of students, so just calculate the number of students in City M because it has more schools than City N. The same goes for Q and R — only Q needs to be calculated because it has more schools than R.

$M = 8 \times 500 = 4{,}000$

$P = 9 \times 400 = 3{,}600$

$Q = 6 \times 700 = 4{,}200$

City Q has the greatest number of students.

105. (D) There are 6 digits in the repeating decimal (769230), so 7 would be the first, seventh, thirteenth digit and so on. To find the 391st digit, divide 391 by 6.

$391 \div 6 = 65$ R1

Since the remainder is 1, that means the 391st digit is the same as the 1st digit, which is 7.

---

106. (E) One revolution is equal to the circumference of the tire:

$$C = 2\pi r = 2(1)(\frac{22}{7}) = \frac{44}{7}\ ft$$

The car travels at 4,400 ft per minute. To calculate the number of revolutions, divide the speed by the circumference:

$$4{,}400 \div \frac{44}{7} = 4{,}400 \times \frac{7}{44} = 700$$

revolutions.

107. (D) $100(2+0.1)^2 - 100 = 100\left(2.1^2\right) - 100$

$= 100(4.41) - 100 = 441 - 100 = 341$

---

108. (G) The total number of handballs in the container is $4 + 5 + 8 + 9 + 11 = 37$.

Since there are 8 yellow handballs, the probability of selecting a yellow handball is $\frac{8}{37}$.

109. (A) Each chair costs Leon \$150 to make, and he sells the chair for \$275. His profit is found by subtracting the cost from the price:

$\$275 - \$150 = \$125$ per chair

If Leon makes and sells 25 chairs in a week, his initial profit is $25 \times \$125 = \$3{,}125$. However, Leon has additional fixed expenses of \$1,250 per week, so this cost must also be subtracted to arrive at the profit. His final profit is $\$3{,}125 - \$1{,}250 = \$1{,}875$.

---

110. (H) Convert 4 ft 7 in. to inches.

Since 12 in. = 1 ft

$4(12) + 7 = 55$ inches

Multiply that by the conversion:

254 cm = 1 in.

$55 \times 2.54 = 139.70$ cm

111. (C) Find the location of J by using $JK = 3\frac{1}{2}$:

$$\frac{3}{8} - J = 3\frac{1}{2}$$

$$J = \frac{3}{8} - 3\frac{1}{2} = -3\frac{1}{8}$$

Find the location of M by using $JM = 9\frac{3}{4}$:

$$M - \left(-3\frac{1}{8}\right) = 9\frac{3}{4}$$

$$M + 3\frac{1}{8} = 9\frac{3}{4}$$

$$M = 9\frac{3}{4} - 3\frac{1}{8} = 6\frac{5}{8}$$

Use $LM = 1\frac{1}{8}$ to find the location of L:

$$6\frac{5}{8} - L = 1\frac{1}{8}$$

$$L = 6\frac{5}{8} - 1\frac{1}{8} = 5\frac{4}{8} = 5\frac{1}{2}$$

112. (G) $4x - 3y = 12$

$$4x = 3y + 12$$

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

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

113. (A) Determine the total number of servings of fruits and vegetables that the students ate by multiplying the number of servings by the number of students in each row of the table. Then add that column to get the total number of servings:

Number of Servings of Fruits and Vegetables	Number of Students	Number of Servings × Number of Students
0	5	0
1	7	7
2	3	6
3	4	12
4	0	0
5	1	5
Total: 30		

Calculate the mean by dividing the total number of servings of fruits and vegetables by the total number of students:

$$\frac{30}{20} = 1\frac{1}{2}$$

114. (G) The ratio is 4:3:2:1, so the total parts is 10.

Since there are two parts resin, the fraction of resin is $\frac{2}{10} = \frac{1}{5}$.

So the amount of resin in 30 lb of paste (for 1 billboard) is $\frac{1}{5} \times 30 = 6$ lb.

For 4 billboards, that would be $6 \times 4 = 24$ lb.

Answer Key for Sample Form A

1. A	14. E	27. C	40. G	53. C	66. H	79. D	92. G	105. D
2. F	15. C	28. H	41. D	54. H	67. A	80. F	93. C	106. E
3. A	16. E	29. A	42. E	55. D	68. G	81. B	94. H	107. D
4. H	17. B	30. F	43. A	56. F	69. B	82. F	95. B	108. G
5. B	18. G	31. D	44. H	57. A	70. F	83. D	96. G	109. A
6. E	19. B	32. G	45. D	58. 162	71. D	84. G	97. B	110. H
7. B	20. E	33. A	46. E	59. 99	72. H	85. C	98. F	111. C
8. H	21. D	34. H	47. C	60. -4	73. B	86. F	99. C	112. G
9. B	22. E	35. B	48. F	61. 45	74. F	87. D	100. H	113. A
10. F	23. A	36. F	49. D	62. 63	75. B	88. E	101. C	114. G
11. D	24. H	37. C	50. E	63. B	76. F	89. D	102. G	
12. H	25. D	38. H	51. D	64. E	77. A	90. G	103. D	
13. B	26. G	39. B	52. E	65. A	78. E	91. B	104. G	

GRADE 8

B

The New York City Department of Education

2022 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.

Line 3: Print your birth date with the number of the month first, then the number of the day, then the last two digits of the year. For example, a birth date of March 1, 2005, would be 3-1-05.

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

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

Grid 5:

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

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

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

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

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

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

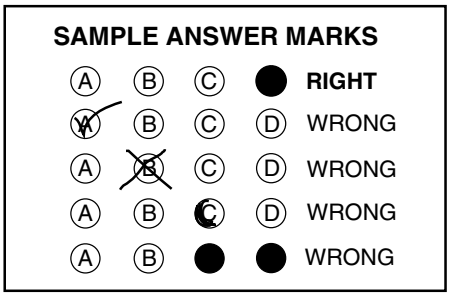
DO NOT OPEN THIS BOOKLET
UNTIL YOU ARE TOLD TO DO SO.

TURN YOUR BOOKLET OVER TO THE BACK COVER.

General Directions, continued

Marking Your Answers

Mark each of your answers on the answer sheet in the row of circles corresponding to the question number printed in the test booklet. Use only a Number 2 pencil. If you change an answer, be sure to erase it completely. Be careful to avoid making any stray pencil marks on your answer sheet. Each question has only one correct answer. If you mark more than one circle in any answer row, that question will be scored as incorrect.



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

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

Planning Your Time

You have 180 minutes to complete the entire test. **How you allot the time between the English Language Arts and Mathematics sections is up to you.** If you begin with the English Language Arts section, you may go on to the Mathematics section as soon as you are ready. Likewise, if you begin with the Mathematics section, you may go on to the English Language Arts section as soon as you are ready. If you complete the test before the allotted time (180 minutes) is over, you may go back to review questions in either section.

Be sure to read the directions for each section carefully. Each question has only one correct answer. Choose the best answer for each question. When you finish a question, go on to the next, until you have completed the last question. Your score is determined by the number of questions you answer correctly. **Answer every question, even if you may not be certain which answer is correct.** Don't spend too much time on a difficult question. Come back to it later if you have time. If time remains, you should check your answers.

Students must stay for the entire test session.

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

Pearson

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

B

1128930 1 2 3 4 5 A B C D E Printed in the USA ISD34457

Part 1 — English Language Arts

57 Questions

Revising/Editing

QUESTIONS 1-10 (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. Read these sentences.

(1) Flyby missions near Jupiter have been happening since 1973.

(2) Flyby missions allow scientists to collect data about Jupiter and its moons.

What is the best way to combine the sentences to clarify the relationship between the ideas?

A. While flyby missions near Jupiter have been happening since 1973, scientists collect data about the planet and its moons.

B. Although there have been flyby missions near Jupiter since 1973, they have allowed scientists to collect data about the planet and its moons.

C. Flyby missions near Jupiter, which allow scientists to collect data about the planet and its moons, have been happening since 1973.

D. Flyby missions have been happening near Jupiter, but scientists have been collecting data about the planet and its moons since 1973.

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

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

E. sentence 1

F. sentence 2

G. sentence 3

H. sentence 4

3. How should the paragraph be revised?

> (1) Danielle spent several hours preparing for an upcoming audition for a play at the community theater. (2) First she did vocal exercises to practice her diction and projection so that her words would carry clearly throughout the large auditorium. (3) Then she studies the text of the monologue to better understand the emotions, and motivations of the character she plans to portray. (4) Finally she recited her monologue in front of a mirror many times, making slight adjustments and improvements to her performance each time.

A. Sentence 1: Change ***spent*** to **had spent**, AND insert a comma after ***play***.

B. Sentence 2: Change ***did*** to **does**, AND insert a comma after ***projection***.

C. Sentence 3: Change ***studies*** to **studied**, AND delete the comma after ***emotions***.

D. Sentence 4: Change ***recited*** to **recites**, AND delete the comma after ***times***.

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

> (1) Both Italian gelato and American ice cream are delightful treats to have on a hot summer day, but many people wonder: what is the difference between the two? (2) To start with, the butterfat content is much higher in ice cream than it is in gelato, making the Italian treat a wiser decision for people looking to make healthier choices. (3) Additionally, the mixing process, which adds less air to the frozen treat, makes gelato denser than ice cream. (4) Finally, gelato is served 10 to 15 degrees warmer than ice cream, which enhances the texture and flavor of the gelato, and allow it to melt more quickly.

E. Sentence 1: Delete the colon after ***wonder*** AND change ***is*** to **are**.

F. Sentence 2: Delete the comma after ***with*** AND change ***it is*** to **they are**.

G. Sentence 3: Delete the comma after ***process*** AND change ***makes*** to **make**.

H. Sentence 4: Delete the comma after ***gelato*** AND change ***allow*** to **allows**.

CONTINUE TO THE NEXT PAGE ►

REVISING/EDITING PART B

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

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 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 karate 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.

5. 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.

6. 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

7. 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.

8. Which transitional phrase should be added to the beginning of sentence 17?

E. Over time

F. In fact

G. Even so

H. For instance

9. 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.

10. 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 11–57

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 ►

Wolves of the Sea

1 The cool and misty landscape of the Great Bear Rainforest can be found along the coast of British Columbia, Canada, and its nearby islands, from Vancouver Island to the Alaskan border. Within this protected area, wolves roam the forests, islands, and beaches. When biologist Chris Darimont began to study these wolves, he wanted to confer with local First Nations groups, as aboriginal Canadians are known, in order to learn what they knew about these wolves. He spoke with Chester Starr, an elder of the Heiltsuk Nation that has occupied the Great Bear Rainforest for thousands of years. What Starr had to say about the wolves changed Darimont's perception of the animals.

2 Starr asked Darimont which wolves he and his team were going to study—the timber wolves (mainland wolves) or the coastal wolves on the islands. The question took Darimont by surprise. Biologists had always believed that the wolves that are sometimes spotted swimming between islands and eating salmon are the same wolves that live on the mainland. Darimont was intrigued by Starr's classification of the wolves as two different groups. At first, he was hesitant to accept the idea. The distances between the mainland and the islands are small, less than a mile. Why would the wolves on the islands be any different from the wolves on the mainland? To find out, Darimont and his research team studied the wolves on the islands and in the densely forested territory of the Great Bear Rainforest for ten years.

3 Throughout the study, Darimont recorded several significant, observable differences between the "sea wolves," as they are nicknamed, and the mainland wolves. Compared with the mainland wolves, the sea wolves are smaller in size and are strong swimmers. In 1996 sea wolves were spotted on an island nearly eight miles from any other land formation. While mainland wolves almost exclusively eat meat, such as deer and elk, and teach their young to hunt for land animals, sea wolves get as much as 90 percent of their nutrition from the sea and teach their young to dig for clams and to catch fish. Sea wolves regularly swim between islands and have been known to sneak up on a seal sunning itself on a rock and make a leaping attack from the water. Some salmon-eating mainland wolves come and go from the islands with the fish-spawning season, but the sea wolves are full-time island residents. Darimont suspects that some sea wolves live their entire life on the islands.

4 The sea wolves displayed not only physical and behavioral differences but also genetic variations from the mainland wolves. After collecting and analyzing the DNA in 800 samples of gray fur and wolf waste, researchers could produce hard biological evidence that sea wolves had genetic markers that made them distinct from the mainland wolves. A genetic marker is a variation in a DNA sequence that can be used to identify individuals or a species because it is passed down to offspring. Darimont hypothesizes that a change in habitat led to the eventual genetic differences between sea wolves and mainland wolves. Many years ago, loss of habitat and food sources forced some mainland wolves out to the islands. They learned to eat everything from kelp and fish eggs to the remains of sea creatures that washed up on the beach. Wolves living on the islands and mainland wolves became more isolated and rarely mated with each other. Over time the two types of wolves became more distinct.

5 It turned out that Chester Starr was right all along. "It sounded totally bizarre at first," admits Darimont, "that there could be two versions of the species." But he now realizes that this skepticism "definitely reflected my ignorance of indigenous knowledge at the time." Learning to trust the wisdom of the Heiltsuk people opened Darimont up to knowledge accumulated over

millennia and positioned him so that he could gather new scientific evidence about one of British Columbia's most elusive species, the sea wolf.

11. The details in paragraph 1 contribute to a central idea of the passage by showing that Darimont

A. believed the Great Bear Rainforest was an ideal location to study wolves in their natural habitat because it is a protected area.

B. values different perspectives, because the information that Starr provided influenced the focus of Darimont's research.

C. thought the Great Bear Rainforest would provide opportunities to study different groups of wolves because the area includes forests and islands.

D. understands the importance of respecting local community members, because Darimont sought permission from an elder of the Heiltsuk Nation before starting his research.

12. Why does the author include details about the conversation between Starr and Darimont in paragraph 2?

E. to explain why Starr had closely observed the relationship between the two groups of wolves Darimont wanted to study

F. to show that Darimont was hoping to work with Starr and to study both groups of wolves in the area

G. to highlight that Darimont was unfamiliar with the area and expected Starr to help him find wolves to study

H. to emphasize that the question asked by Starr caused Darimont to review his initial assumption about the wolves

13. Read this sentence from paragraph 4.

> **After collecting and analyzing the DNA in 800 samples of gray fur and wolf waste, researchers could produce hard biological evidence that sea wolves had genetic markers that made them distinct from the mainland wolves.**

The phrase "hard biological evidence" conveys that the goal of the research team was to

A. develop a procedure in order to ensure their study yielded plentiful data about the wolves.

B. seek definitive scientific proof of the number of wolf species present in the area of the study.

C. conduct a study to evaluate multiple theories about the diets of different wolf species.

D. discover if the new data would provide information different from that of previous studies.

14. The author uses the word "admits" in paragraph 5 most likely to

E. note that Darimont's genetic research verified a theory based solely on field observations.

F. imply that Darimont's study was disappointing because the conclusion that he reached was not original.

G. emphasize that Darimont's study ultimately confirmed an idea that he had initially doubted.

H. highlight that Darimont's results led him to draw a conclusion from his research that his team did not agree with.

15. Which sentence from the passage best supports the idea that sea wolves had successfully adapted to living on the islands?

A. "While mainland wolves almost exclusively eat meat, such as deer and elk, and teach their young to hunt for land animals, sea wolves get as much as 90 percent of their nutrition from the sea and teach their young to dig for clams and to catch fish." (paragraph 3)

B. "Sea wolves regularly swim between islands and have been known to sneak up on a seal sunning itself on a rock and make a leaping attack from the water." (paragraph 3)

C. "Darimont suspects that some sea wolves live their entire life on the islands." (paragraph 3)

D. "Darimont hypothesizes that a change in habitat led to the eventual genetic differences between sea wolves and mainland wolves." (paragraph 4)

16. How did a change in habitat most affect the wolf population of the Great Bear Rainforest over time?

E. It caused some of the wolves to learn new hunting techniques in order to catch increasingly scarce prey.

F. It caused the wolves to form smaller packs and eventually separate, establishing distinct territories.

G. It caused some of the wolves to gradually become a new, genetically distinct species as they adapted behaviorally.

H. It caused the wolves to adapt their diet as different food sources became available in the area.

CONTINUE TO THE NEXT PAGE ►

In 1903 brothers Wilbur and Orville Wright conducted various experiments related to flying machines. These experiments would eventually lead to air travel becoming a reliable form of transportation.

Excerpt from "How We Made the First Flight"

by Orville Wright

1 During the night of December 16, 1903, a strong cold wind blew from the north. When we arose on the morning of the 17th, the puddles of water, which had been standing about camp since the recent rains, were covered with ice. The wind had a velocity of 10 to 12 meters per second (22 to 27 miles an hour). We thought it would die down before long, and so remained indoors the early part of the morning. But when ten o'clock arrived, and the wind was as brisk as ever, we decided that we had better get the machine out and attempt a flight. We hung out the signal for the men of the Life Saving Station.[1] We thought that by facing the flyer into a strong wind, there ought to be no trouble in launching it from the level ground about camp. We realized the difficulties of flying in so high a wind, but estimated that the added dangers in flight would be partly compensated for by the slower speed in landing.

Final Preparations

2 We laid the track on a smooth stretch of ground about one hundred feet north of the new building. The biting cold wind made work difficult, and we had to warm up frequently in our living room, where we had a good fire in an improvised stove made of a large carbide[2] can. By the time all was ready, J. T. Daniels, W. S. Dough and A. D. Etheridge, members of the Kill Devil[3] Life Saving Station; W. C. Brinkley of Manteo, and Johnny Moore, a boy from Nags Head,[4] had arrived.

3 We had a "Richard" hand anemometer with which we measured the velocity of the wind. Measurements made just before starting the first flight showed velocities of 11 to 12 meters per second, or 24 to 27 miles per hour. . . .

Audacity—and Calculation

4 Wilbur having used his turn in the unsuccessful attempt on the 14th, the right to the first trial now belonged to me. After running the motor a few minutes to heat it up, I released the wire that held the machine to the track, and the machine started forward in the wind. Wilbur ran at the side of the machine, holding the wing to balance it on the track. Unlike the start on the 14th, made in a calm, the machine, facing a 27-mile wind, started very slowly. Wilbur was able to stay with it till it lifted from the track after a forty-foot run. One of the Life Saving men snapped the camera for us, taking a picture just as the machine had reached the end of the track and had risen to a height of about two feet. The slow forward speed of the machine over the ground is clearly shown in the picture by Wilbur's attitude. He stayed along beside the machine without any effort.

---

[1]**Life Saving Station:** one of the rescue stations along the Atlantic coastline that provided assistance to mariners in distress

[2]**carbide:** a very hard material composed of carbon and other heavy metals

[3]**Kill Devil:** the town of Kill Devil Hills in eastern North Carolina

[4]**Nags Head:** a town in eastern North Carolina

Flight

The course of the flight up and down was exceedingly erratic, partly due to the irregularity of the air, and partly to lack of experience in handling this machine. The control of the front rudder was difficult on account of its being balanced too near the center. This gave it a tendency to turn itself when started; so that it turned too far on one side and then too far on the other. As a result the machine would rise suddenly to about ten feet, and then as suddenly dart for the ground. A sudden dart when a little over a hundred feet from the end of the track, or a little over 120 feet from the point at which it rose into the air, ended the flight. As the velocity of the wind was over 35 feet per second and the speed of the machine over the ground against this wind ten feet per second, the speed of the machine relative to the air was over 45 feet per second, and the length of the flight was equivalent to a flight of 540 feet made in calm air. This flight lasted only 12 seconds, but it was nevertheless the first in the history of the world in which a machine carrying a man had raised itself by its own power into the air in full flight, had sailed forward without reduction of speed and had finally landed at a point as high as that from which it started.

From "How We Made the First Flight" by Orville Wright—Public Domain/Federal Aviation Administration

17. How does paragraph 1 introduce the idea that the Wright brothers knew that their flight attempt was risky?

A. through the mention of a signal to notify lifesaving experts that the flight attempt was about to begin

B. by providing specific details about the speed of the wind and the Wright brothers' response to the windy conditions

C. by suggesting that a slower landing would be necessary at the end of the flight in order to maintain safety

D. through the indication that the Wright brothers waited indoors for most of the morning because of the poor weather

18. Read this sentence from paragraph 4.

> **Wilbur having used his turn in the unsuccessful attempt on the 14th, the right to the first trial now belonged to me.**

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

E. demonstrating the challenge of the extreme winter conditions during the flight.

F. revealing how many tries it took for Wilbur Wright to finally get the machine to take flight.

G. demonstrating that both Orville and Wilbur Wright were eager to pilot what could potentially be the first flight.

H. suggesting a sense that both brothers felt confident they would soon succeed in completing the first flight.

19. The photograph mentioned in paragraph 4 is significant because it

A. documents that the machine rose into the air as soon as the tethering wire was released.

B. provides proof of the critical moment the machine took flight.

C. documents that the wind reduced the speed of the plane at the start of the flight.

D. provides proof that the pilot had to gradually increase the height of the plane in the air.

20. How do the details in paragraph 5 about the uneven nature of the flight convey a central idea of the excerpt?

E. by explaining how the flawed design of the machine caused it to turn unpredictably in the air and brought the first flight by a person to an abrupt end

F. by indicating that the difficulty in controlling the flight was caused by the rudimentary instruments of the machine and the inexperience of the pilot

G. by explaining how the pilot and the plane overcame adverse conditions in order to complete the first piloted flight

H. by indicating that the gradual change in wind velocity created an extreme environment in which to maneuver the plane and maintain its flight

21. Read this sentence from paragraph 5.

> **As the velocity of the wind was over 35 feet per second and the speed of the machine over the ground against this wind ten feet per second, the speed of the machine relative to the air was over 45 feet per second, and the length of the flight was equivalent to a flight of 540 feet made in calm air.**

How does the sentence help convey Orville Wright's perspective about this first flight?

A. It suggests that he was frustrated by the poor flying conditions on the day of the flight.

B. It emphasizes that he believed the flight was successful despite its short distance.

C. It provides a comparison between flight distances under calm and high wind conditions.

D. It highlights the importance of such calculations in the success of future flights.

22. Read this sentence from paragraph 5.

> **A sudden dart when a little over a hundred feet from the end of the track, or a little over 120 feet from the point at which it rose into the air, ended the flight.**

How does the sentence contribute to the paragraph?

E. It details the need for the pilot to have quick reflexes while flying the machine.

F. It presents the idea that the difficulty of operating the machine shortened the flight.

G. It describes the shift in wind speed that made flying nearly impossible.

H. It provides an overview of the flight's progression from takeoff to landing.

23. Read this sentence from paragraph 5.

> **This flight lasted only 12 seconds, but it was nevertheless the first in the history of the world in which a machine carrying a man had raised itself by its own power into the air in full flight, had sailed forward without reduction of speed and had finally landed at a point as high as that from which it started.**

The words "only," "nevertheless," and "finally" most clearly convey the idea that

A. even a flight of such minor duration had taken a long time to achieve.

B. the short flight gave the Wright brothers hope for longer ones in the future.

C. the flight proved that the machine was, at last, capable of becoming airborne.

D. although it was brief, the flight was a remarkable accomplishment.

24. Which sentence from the excerpt best supports the idea that the Wright brothers had to adapt their plans for the flight in order to accommodate the weather conditions?

E. "When we arose on the morning of the 17th, the puddles of water, which had been standing about camp since the recent rains, were covered with ice." (paragraph 1)

F. "We realized the difficulties of flying in so high a wind, but estimated that the added dangers in flight would be partly compensated for by the slower speed in landing." (paragraph 1)

G. "After running the motor a few minutes to heat it up, I released the wire that held the machine to the track, and the machine started forward in the wind." (paragraph 4)

H. "The course of the flight up and down was exceedingly erratic, partly due to the irregularity of the air, and partly to lack of experience in handling this machine." (paragraph 5)

25. The use of chronological structure contributes to the development of ideas in the excerpt by

A. outlining the actions that the Wright brothers took to prepare for and successfully complete the first flight.

B. identifying the primary factors that allowed the Wright brothers to overcome obstacles and achieve the first flight.

C. showing how the Wright brothers applied lessons learned from their previous flight attempts to accomplish the first flight.

D. demonstrating how the Wright brothers analyzed the impact of wind velocity to identify the ideal conditions for the first flight.

CONTINUE TO THE NEXT PAGE ►

In this excerpt, published in 1914, author and professor Dallas Lore Sharp describes a summer cattle roundup in Oregon. The heat and dust had been relentless for three days. The cowboys were exhausted, and the cattle were restless. The ranch boss, Wade, had led the drive to a watering place, only to find it empty.

Excerpt from "The Spirit of the Herd"

by Dallas Lore Sharp

1 Along with the wagon had come the fresh horses—one of them being Peroxide Jim, a supple, powerful, clean-limbed buckskin, a horse, I think, that had as fine and intelligent an animal-face as any creature I ever saw. Wade had been saving this horse for emergency work. And why should he not have been saved fresh for just such a need as this? Are there not superior horses as well as superior men—a Peroxide Jim to complement a Wade?

2 The horse knew the cattle business and knew his rider perfectly; and though there was nothing like sentiment about the boss of the P Ranch riders, his faith in Peroxide Jim was complete. . . .

3 The desert, where the herd was camped, was one of the highest of a series of tablelands,[1] or benches; it lay as level as a floor, rimmed by sheer rock, from which there was a drop to the bench of sage below. The herd when overtaken by the dusk had been headed for a pass descending to the next lower bench, but was now halted within a mile of the rim rock on the east, where there was a perpendicular fall of about three hundred feet. . . .

4 In the taut silence of the stirless desert night, with the tension of the herd at the snapping-point, any quick, unwonted sight or sound would stampede them. The sneezing of a horse, the flare of a match, would be enough to send the whole four thousand headlong—blind, frenzied, trampling—till spent and scattered over the plain.

5 And so, as he rode, Wade began to sing. The rider ahead of him took up the air and passed it on until, above the stepping stir of the hoofs rose the faint voices of the men, and all the herd was bound about by the slow plaintive measures of some old song. It was not to soothe their savage breasts that the riders sang to the cattle, but rather to preempt the dreaded silence, to relieve the tension, and so to prevent the shock of any sudden startling noise.

6 So they sang and rode and the night wore on to one o'clock, when Wade, coming up on the rim-rock side, felt a cool breeze fan his face, and caught a breath of fresh, moist wind with the taste of water in it.

7 He checked his horse instantly, listening as the wind swept past him over the cattle. But they must already have smelled it, for they had ceased their milling, the whole herd standing motionless, the indistinct forms close to him in the dark showing their bald faces lifted to drink the sweet wet breath that came over the rim. Then they started on again, but faster, and with a rumbling now from their hoarse throats that tightened Wade's grip on the reins.

8 The sound seemed to come out of the earth, a low, rumbling mumble, as dark as the night and as wide as the plain, a thick, inarticulate bellow that stood every rider stiff in his stirrups. . . .

[1] **tablelands:** plateaus, flat areas of land sharply elevated from the surrounding area

9 Then the breeze caught the dust and carried it back from the gray-coated, ghostly shapes, and Wade saw that the animals were still moving in a circle. He must keep them going. He touched his horse to ride on with them, when across the black sky flashed a vivid streak of lightning.

10 There was a snort from the steers, a quick clap of horns and hoofs from far within the herd, a tremor of the plain, a roar, a surging mass—and Wade was riding the flank of a wild stampede. Before him, behind him, beside him, pressing hard upon his horse, galloped the frenzied steers, and beyond them a multitude borne on, and bearing him on, by the heave of the galloping herd.

11 Wade was riding for his life. He knew it. His horse knew it. He was riding to turn the herd, too, back from the rim, as the horse also knew. The cattle were after water—water-mad—ready to go over the precipice to get it, carrying horse and rider with them. Wade was the only rider between the herd and the rim. It was black as death. He could see nothing in the sage, could scarcely discern the pounding, panting shadows at his side. He knew that he was being borne toward the rim, how fast he could not tell, but he knew by the swish of the brush against his tapaderos[2] and the plunging of the horse that the ground was growing stonier, that they were nearing the rocks.

12 To outrun the herd was his only chance for life. If he could come up with the leaders he might not only escape, but even stand a chance of heading them off upon the plain and saving the herd. There were cattle still ahead of him; how many, what part of them all, he could not make out in the dark. But the horse knew. The reins hung on his straight neck, where his rider had dropped them, as, yelling and firing over the wild herd, he had given this horse the race to win, to lose.

13 They were riding the rim. Close on their left bore down the flank of the herd, and on their right, under their very feet, was a precipice, so close that they felt its blackness—its three hundred feet of fall! . . .

14 . . . Then Wade found himself racing neck and neck with a big white steer, which the horse, with marvelous instinct, seemed to pick out from a bunch, and to cling to, forcing him gradually ahead, till, cutting him free from the bunch entirely, he bore him off into the swishing sage.

15 The steers coming on close behind followed their leader, and in, after them, swung others. The tide was turning from the rim. More and more were veering, and within a short time the whole herd, bearing off from the cliffs, was pounding over the open plains.

16 Whose race was it? It was Peroxide Jim's, according to Wade, for not by word or by touch of hand or knee had the horse been directed in the run. From the flash of the lightning the horse had taken the bit, had covered an indescribably perilous path at top speed, had outrun the herd and turned it from the edge of the rim rock, without a false step or a tremor of fear.

From "The Spirit of the Herd" by Dallas Lore Sharp—Public Domain

[2]**tapaderos:** leather covers for stirrups

26. Which sentence from the excerpt best explains why Wade reserved Peroxide Jim for "emergency work" (paragraph 1)?

E. "Are there not superior horses as well as superior men—a Peroxide Jim to complement a Wade?" (paragraph 1)

F. "Before him, behind him, beside him, pressing hard upon his horse, galloped the frenzied steers, and beyond them a multitude borne on, and bearing him on, by the heave of the galloping herd." (paragraph 10)

G. "He knew that he was being borne toward the rim, how fast he could not tell, but he knew by the swish of the brush against his tapaderos and the plunging of the horse that the ground was growing stonier, that they were nearing the rocks." (paragraph 11)

H. "From the flash of the lightning the horse had taken the bit, had covered an indescribably perilous path at top speed, had outrun the herd and turned it from the edge of the rim rock, without a false step or a tremor of fear." (paragraph 16)

27. Paragraphs 1–2 contribute to the development of the central idea of the excerpt by

A. revealing the respect Wade had for his horse.

B. emphasizing Wade's high expectations of his horse and himself.

C. indicating that Wade and his horse understood the cattle business.

D. demonstrating Wade's ability to gauge a horse's competence.

28. How does paragraph 3 convey the effect of the setting on the cattle drive?

E. It shows how the growing darkness created challenges for the riders in getting the herd to move.

F. It describes how the changing elevation contributed to the dangerousness of the environment.

G. It describes how the desert created an uncomfortable feeling of isolation for the riders and the cattle.

H. It shows how the steep terrain made it difficult for the cattle to keep moving forward.

29. How does paragraph 9 fit into the overall structure of the excerpt?

A. It hints at the change in the setting that caused Wade to suddenly become alert.

B. It creates a false sense of calm that shows how unprepared the men were for what was about to happen.

C. It introduces the idea that Wade was a skillful leader in unpredictable circumstances.

D. It presents the incident that caused the main conflict Wade and Peroxide Jim addressed.

30. Read this sentence from paragraph 13.

> **Close on their left bore down the flank of the herd, and on their right, under their very feet, was a precipice, so close that they felt its blackness—its three hundred feet of fall!**

The phrase "bore down the flank of the herd" conveys that Wade

E. struggled to see the front of the herd.

F. had to ride quickly to keep up with the herd.

G. was forced to ride between the edge of the cliff and the herd.

H. knew that the drop of the cliff would frighten the herd.

31. Read these sentences from the excerpt.

> **He was riding to turn the herd, too, back from the rim, as the horse also knew.** (paragraph 11)
>
> **It was Peroxide Jim's, according to Wade, for not by word or by touch of hand or knee had the horse been directed in the run.** (paragraph 16)

How do these sentences develop a central idea in the excerpt?

A. They suggest that Wade would have been unable to save the herd without Peroxide Jim.

B. They imply that Wade spent many hours training Peroxide Jim to herd cattle.

C. They show that Peroxide Jim was able to understand a situation and take action.

D. They indicate that Peroxide Jim was unafraid of the dangers presented by the stampede and the cliff.

32. How do the details in paragraphs 14–16 help convey a central idea of the excerpt?

E. They highlight Peroxide Jim's natural ability to control the herd.

F. They emphasize the danger of the situation from which Peroxide Jim rescued the herd.

G. They show that Peroxide Jim's physical strength allowed him to force the herd to turn.

H. They indicate that Peroxide Jim anticipated the herd's stampede before the men did.

33. Which sentence from the excerpt best reveals the mood on the drive before the lightning struck?

A. "The herd when overtaken by the dusk had been headed for a pass descending to the next lower bench, but was now halted within a mile of the rim rock on the east, where there was a perpendicular fall of about three hundred feet." (paragraph 3)

B. "It was not to soothe their savage breasts that the riders sang to the cattle, but rather to preempt the dreaded silence, to relieve the tension, and so to prevent the shock of any sudden startling noise." (paragraph 5)

C. "He checked his horse instantly, listening as the wind swept past him over the cattle." (paragraph 7)

D. "Then the breeze caught the dust and carried it back from the gray-coated, ghostly shapes, and Wade saw that the animals were still moving in a circle." (paragraph 9)

CONTINUE TO THE NEXT PAGE ►

A Miracle Mile

1 In the 1950s people compared running one mile in four minutes to scaling Mount Everest and nicknamed the feat a "dream mile." Although such an accomplishment was considered humanly impossible, several elite runners aimed to break that supposedly impenetrable barrier. One of them was a twenty-five-year-old medical student named Roger Bannister.

2 Roger Bannister had tasted failure during the 1952 Olympics. There, he was favored to win the 1,500-meter competition, a distance slightly shorter than a mile, but he finished in a dismal fourth place instead. Bannister's performance was a disappointment for him and his country, Great Britain. Determined to redeem himself, Bannister postponed his plans to retire from racing and focused on the ultimate prize—breaking the four-minute-mile barrier.

3 Bannister attacked the elusive milestone with a positive attitude and logical planning. The amateur athlete decided to use intensive interval training to develop endurance and speed. For these workouts, Bannister ran an interval of ten consecutive laps on a quarter-mile track, aiming for sixty seconds each lap. In between intervals, he let his body recover for two minutes.

4 By early 1954, Bannister had succeeded in lowering his quarter-mile pace to sixty-one seconds, but he had to shave off at least one more second in order to reach his target. Frustrated by the plateau he had reached, Bannister took a break from training and went mountain climbing for three days. The rest from running permitted his muscles to recuperate and left him feeling refreshed. When Bannister returned to the track, he completed ten quarter-mile-long intervals at fifty-nine seconds each. He finally felt prepared to attempt to break the world record.

5 As a member of the Amateur Athletic Association (AAA), Bannister joined the AAA team for a track meet against Oxford University. The event took place on a cinder track in Oxford on May 6, 1954. Bannister and his two AAA teammates, Chris Chataway and Chris Brasher, were close friends and frequent running partners. Chataway and Brasher agreed to help Bannister accomplish his goal by being his "rabbits."

6 In track and field, rabbits are runners who enter the race solely to pace a teammate for a segment of the course. Typically, a runner settles in behind the rabbit and allows the rabbit to set an appropriate tempo. Additionally, by running behind the rabbit, the runner conserves about 15 percent of his or her effort. When the starting pistol fired, Brasher pounced into the lead, and Bannister followed behind his first rabbit.

7 Propelled by the excitement, Bannister lost his instinctive feel for his pace and shouted "Faster!" at Brasher. Brasher, however, remained composed and maintained his current steady but grueling pace, completing the first two laps in a desirable one minute and fifty-eight seconds. Then Chataway surged forward, leading Bannister at this same punishing rate for another lap and a half. At the beginning of the back straightaway of the track, Bannister bolted past Chataway. Bannister said, "I felt that the moment of a lifetime had come. There was no pain, only a great unity of movement and aim." Bannister crossed the finish line in 3 minutes 59.4 seconds. The ecstatic crowd erupted the moment the timekeeper announced the word "three."

8 Soon after Bannister's achievement, four other athletes matched his performance. A new mindset had taken root among runners. Over the years, the record continued to fall. However, the current record, 3 minutes 43.13 seconds, has stood unbroken since 1999. Some question whether this

record represents the limits of human ability. But perhaps there is another Bannister, an athlete who, with willpower and dedication, will accomplish the miraculous.

34. The words "feat," "humanly impossible," and "impenetrable barrier" in paragraph 1 affect the tone of the paragraph because they

E. highlight the idea that only the most skilled runners would be able to run a four-minute mile.

F. emphasize the idea that running a mile in less than four minutes was a seemingly unattainable goal.

G. convey the competitiveness among elite runners to consistently set and break speed records.

H. show the intensity of the training programs athletes endure in order to achieve their goals.

35. Which sentence best supports the idea that Bannister needed an alternative to "logical planning" (paragraph 3) in order to accomplish his goal?

A. "Bannister's performance was a disappointment for him and his country, Great Britain." (paragraph 2)

B. "The amateur athlete decided to use intensive interval training to develop endurance and speed." (paragraph 3)

C. "For these workouts, Bannister ran an interval of ten consecutive laps on a quarter-mile track, aiming for sixty seconds each lap." (paragraph 3)

D. "Frustrated by the plateau he had reached, Bannister took a break from training and went mountain climbing for three days." (paragraph 4)

36. Read these sentences from paragraph 7.

> **Bannister said, "I felt that the moment of a lifetime had come. There was no pain, only a great unity of movement and aim."**

The sentences contribute to the development of ideas in the passage by showing that Bannister

E. knew that he was about to achieve the goal he had worked toward.

F. was no longer experiencing personal disappointment from his past failure in the Olympics.

G. felt grateful to his teammates for helping him take the lead.

H. was satisfied that his training had helped him perfect his running technique.

37. The phrase "a new mindset had taken root" in paragraph 8 conveys the idea that

A. runners recognized that running a mile in under four minutes was physically possible.

B. breaking the four-minute-mile barrier was no longer considered an impressive feat for elite runners.

C. runners understood how hard they would have to train in order to run a mile in under four minutes.

D. elite runners entered races in an attempt to break the four-minute-mile barrier.

38. Which sentence from the passage indicates that Bannister nearly made a mistake that would have cost him the world record?

E. "By early 1954, Bannister had succeeded in lowering his quarter-mile pace to sixty-one seconds, but he had to shave off at least one more second in order to reach his target." (paragraph 4)

F. "When the starting pistol fired, Brasher pounced into the lead, and Bannister followed behind his first rabbit." (paragraph 6)

G. "Propelled by the excitement, Bannister lost his instinctive feel for his pace and shouted 'Faster!' at Brasher." (paragraph 7)

H. "At the beginning of the back straightaway of the track, Bannister bolted past Chataway." (paragraph 7)

39. Bannister's loss in the 1952 Olympics influenced his decision to pursue breaking the four-minute-mile barrier by

A. allowing him to recognize his weaknesses and improve his running ability.

B. prompting him to take a different approach to his regular training.

C. motivating him to prove to himself that he could set and achieve a goal.

D. giving him the opportunity to reach a goal no runner had ever accomplished.

40. How did interval training affect Bannister's performance?

E. It helped him learn how to moderate his pace while running.

F. It helped him conserve effort when running with teammates.

G. It helped him improve his pace and stamina while running.

H. It helped him decrease his recovery time after an intense run.

41. How does the author's use of chronological structure contribute to the development of ideas in the passage?

A. It presents the increasing physical effects of Bannister's training methods as he prepared to break the four-minute-mile barrier.

B. It shows the increase in Bannister's confidence in his ability to break the four-minute-mile barrier.

C. It emphasizes the key events in Bannister's life that inspired him to break the four-minute-mile barrier.

D. It highlights the progression of Bannister's training and details about his successful attempt to break the four-minute-mile barrier.

The Great Serpent Mound, located in Adams County, Ohio, is a human-made mound of earth that researchers believe was created between 300 B.C. and A.D. 1100 by an indigenous culture.

Serpent Mound

Ohio, 1846

Brush Creek stood low when the museum men came
with their measuring tapes and sketchbooks.
It was winter. Fringed with ice,
the creek doubled back on itself
as if it had forgotten something.
Pa was in Cincinnati, or else on his way home,
so Ma told me to lead the men
into the marshy low grounds. It being winter,
there was little underbrush to speak of—
in the summer there would have been
briars, poison ivy, biting flies. I listened
for the *swish* of a beaver's heavy tail,
the chitter of a chickadee, or the cry of a hawk,
but the winter silence of the creek pressed
down on all of us like a weight.
The humps in the ground were all but
invisible until you were right up on them. The figure
was even less obvious: the sinuous body,
the tail coiled three times around,
and at the other end, the mouth wide open.
In the summer the creek bottom was crowded
with so much life that you could trip over
the ridges of earth before you saw
anything at all. In winter you could climb
a tree and get some idea of the whole thing:
the serpent's body undulating, slithering
silently across the ancient
earth. At the mouth end, there was an oval mound
as if the snake were about to swallow an egg—
as snakes sometimes did in our rickety
henhouse—my Pa always said, or
as if swallowing the sun, one of the museum
men suggested, taking notes with his quill pen,
an old-style inkhorn slung at his side.
I liked that: swallowing the sun,
just the sort of thing a snake might do,
might want to do. When, later, I told my sister Ruth,
she disagreed. It is singing to the sun,
she insisted. That is why its mouth
is wide open. She said, "Sometimes I think
I hear it on summer nights. Not swallowing, singing."

42. How does the poem's form contribute to the poem's meaning?

E. The use of one continuous stanza and the pattern of the lines mimic the long and winding shape of the mound.

F. The uneven line lengths emphasize the variety of ways people interpret the meaning of the mound.

G. The dashes throughout the poem highlight the speaker's changing thoughts about the significance of the mound.

H. The lack of a regular rhyme scheme and meter convey that the speaker struggles to comprehend the vastness of the mound.

43. Which lines reveal how the setting affects the speaker and the men from the museum?

A. "It being winter, / there was little underbrush to speak of—" (lines 8–9)

B. "but the winter silence of the creek pressed / down on all of us like a weight." (lines 14–15)

C. "The humps in the ground were all but / invisible until you were right up on them." (lines 16–17)

D. "In the summer the creek bottom was crowded / with so much life that you could trip" (lines 21–22)

44. Lines 1–2 contribute to the development of ideas in the poem by

E. suggesting that the men are too busy with their work to talk to the speaker.

F. helping establish the reason for the men's visit and purposeful behavior.

G. hinting that the men have hidden motives for studying the mound.

H. indicating why the speaker is fascinated by the men and wants to help them.

45. Read line 28 from the poem.

At the mouth end, there was an oval mound

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

A. It describes a feature of the mound that the men from the museum need to document.

B. It introduces a comparison of the body of the mound with the head of the mound.

C. It introduces a feature of the mound that has a different meaning to different people.

D. It describes a part of the mound that is difficult to see from far away.

46. What impact do the phrases "all but / invisible" and "even less obvious" in lines 16–18 have on the meaning of the poem?

E. They indicate that viewing the full size and shape of the mound is difficult.

F. They suggest that the location of the mound is unknown to most people.

G. They imply that the speaker wants the location of the mound to remain a secret.

H. They reveal that the speaker is unfamiliar with the significance of the mound.

47. What impact do the words "*swish*," "chitter," and "cry" in lines 12–13 have in the poem?

A. They illustrate how lively the mound's surroundings are during the summer.

B. They show how the mound disrupts natural life in the marsh.

C. They indicate the variety of wildlife found in the area around the mound.

D. They suggest that the speaker prefers the mound's appearance in winter.

48. How does the speaker's interaction with Ruth in lines 37–41 convey a central idea of the poem?

E. It suggests that the most accurate interpretations of the mound come from knowing the purpose of the mound.

F. It emphasizes that there are multiple interpretations of the mound based on feelings and experiences.

G. It reveals the benefit of considering different interpretations of the mound's significance.

H. It implies that scientific study of the mound's purpose will affect what the mound symbolizes to people.

49. The poet contrasts the speaker's and Ruth's points of view regarding the mound by using dialogue to

A. imply that Ruth is worried that her interpretation of the mound will be seen as too abstract.

B. indicate that Ruth hopes her interpretation of the mound will be shared by the men from the museum.

C. suggest that Ruth wants the speaker to agree with her interpretation of the mound.

D. show that Ruth has already decided on her interpretation of the mound.

CONTINUE TO THE NEXT PAGE ►

A Memory Revolution

1 A high school senior logs on to a computer at the library to double-check the application due date listed on a college admissions website. Nearby, a librarian helps a group of biology students use a database to search for recent studies about mammals. In the past few decades, the Internet has become an integral component of daily life for many people. The seemingly limitless power of search engines made the Internet search extremely common, and today people increasingly rely on the Internet's vast accumulation of sources to access all types of information. Scientists are beginning to examine how this reliance is modifying the strategies people use to store and prioritize information in their mind.

A Dependable and Valuable Asset

2 Psychologist Benjamin Storm from the University of California, Santa Cruz, and researchers Sean Stone and Aaron Benjamin devised an experiment to study students' tendency to depend on the Internet for facts. To begin, the scientists divided sixty participants into multiple groups, including an "Internet" group and a "memory" group, and placed them in front of computers. The Internet group was required to use the search engine Google to answer eight challenging trivia questions. In contrast, participants in the memory group were permitted to use only their personal knowledge to answer the questions. In the second round, the researchers administered notably easier questions. This time, they allowed each group the option of using Google as they answered. Their results showed that 83 percent of the Internet group continued to consult Google in the second round, while only 63 percent of the memory group chose to do so.

3 People's growing inclination to rely on the Internet in order to retrieve information, particularly facts and figures, is called cognitive offloading. Canadian researcher Evan F. Risko and British researcher Sam Gilbert, who have written extensively about the topic, say a similar process has been taking place for centuries. In the past, people used resources like encyclopedias to assist their memories; however, today the Internet, serving as a vast extended memory, allows people to digitally access and retrieve much larger volumes of information. Consequently, people's minds are free for other cognitive feats, such as connecting data, learning new information, or solving problems.

Filing Information Away

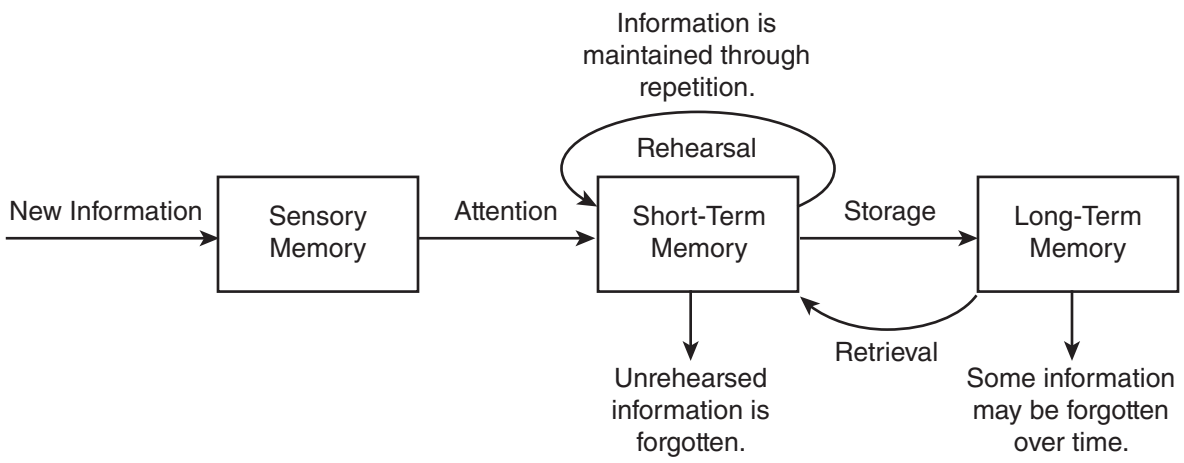
4 The use of the Internet also appears to be modifying the strategies people use to store information in their mind. Researchers Betsy Sparrow from Columbia University, Jenny Liu from the University of Wisconsin-Madison, and Daniel Wegner from Harvard University conducted several studies to discover how people efficiently manage their information intake.

5 To begin, the researchers examined how people evaluate which information deserves their effort to remember. For this experiment, participants read forty trivia facts, such as "An ostrich's eye is bigger than its brain," and typed the statements into a computer file. Half the participants had been previously told the file would be saved, while half believed it would be erased. Next, the participants wrote down every fact they could recall. Those who believed the information would be erased and no longer available could recall 40 percent more facts than those who thought the information would be saved.

6 In another experiment, the same researchers tested the ability of study participants to remember where to access information. For this trial, participants read and typed trivia statements, which they saved in folders with generic names such as "Facts" and "Items." After spending ten minutes writing down all the facts they could recall from memory, participants were asked which folder contained a particular fact based on a keyword. For example, "Which folder has the fact about ostriches?" Overall, participants recalled the information's location more often than the content itself, correctly identifying 49 percent of the folders for specific facts while remembering only 23 percent of the actual trivia. The researchers concluded that our memory is adapting to the Internet age by prioritizing where to locate information even when the specific details are forgotten. According to Sparrow, the Internet has become an important form of transactive memory, an external source of the recollections and associative networks that constitute memory.

7 As the Internet's resources continue to expand our "external" memory, some question whether the process may cause people to depend too heavily on technology. However, Steven Pinker, a professor of psychology at Harvard University, says, "Knowledge is increasing exponentially; human brainpower and waking hours are not. Fortunately, the Internet and information technologies are helping us manage, search and retrieve our collective intellectual output at different scales, from Twitter and previews to e-books and online encyclopedias. Far from making us stupid, these technologies are the only things that will keep us smart."

HOW MEMORY WORKS



50. The details in paragraph 3 about cognitive offloading convey a central idea of the passage by

E. suggesting that reliance on the Internet for information is inevitable.

F. demonstrating how the methods used to store and find information have changed over time.

G. explaining how encyclopedias and the Internet are similar sources of information.

H. implying that more information can be understood now than ever before.

51. How do the details about the experiment described in paragraph 5 convey a central idea of the passage?

A. They suggest that the act of repeating information by typing it on a keyboard may improve a person's memory.

B. They explain that a person will forget information faster if the information is considered unimportant.

C. They indicate that a person may start to forget details when the amount of information becomes overwhelming.

D. They suggest that memory is affected by whether a person expects to have access to the information in the future.

52. Read this sentence from paragraph 7.

> **As the Internet's resources continue to expand our "external" memory, some question whether the process may cause people to depend too heavily on technology.**

How does the sentence contribute to the structure and development of ideas in the passage?

E. It presents a claim about the risks of relying on the Internet that prompted the research described in paragraphs 2 and 6.

F. It contrasts a disadvantage of relying on the Internet with the benefits of Internet use that are described in paragraphs 2 and 6.

G. It signals a shift from a neutral viewpoint in paragraphs 2 and 6 to a presentation of an argument and a counterargument.

H. It introduces a counterargument and marks a transition from an optimistic tone in paragraphs 2 and 6 to a cautious tone as the counterargument is developed.

53. The study described in paragraph 6 influenced researchers' ideas about memory in the digital age by

A. highlighting instances when organizing detailed information made it easier to remember.

B. confirming that keywords can be remembered more easily than large amounts of information.

C. identifying a shift in focus from remembering specific information to knowing where to find it.

D. emphasizing that remembering a basic idea is more important than storing detailed information.

54. How does the diagram provide additional support for the topic presented in the passage?

E. It reveals why human brains must adapt to obtaining information from the Internet as opposed to other sources.

F. It indicates how people can use the Internet to help improve their long-term recollection of information.

G. It shows how study participants' brains distinguished between important and unimportant details.

H. It depicts the idea that repetition and rehearsal are necessary to recall information when tools such as search engines are unavailable.

55. Which evidence from the passage is most relevant to the claim in paragraph 7 that " 'far from making us stupid, these technologies are the only things that will keep us smart' "?

A. the revelation that most people opted to use the Internet to answer relatively easy trivia questions rather than relying on their own brainpower (paragraph 2)

B. the assertion that the storage of information on the Internet frees people to focus on higher-order tasks such as problem solving (paragraph 3)

C. the connection between how people organize information in their mind and their ability to recall that information (paragraph 5)

D. the description of transactive memory as an expansive external source that people can use to store information (paragraph 6)

56. Which sentence from the passage suggests that using Internet search engines may lead people to rely less on their own ability to recall information?

E. "In the past few decades, the Internet has become an integral component of daily life for many people." (paragraph 1)

F. "The Internet group was required to use the search engine Google to answer eight challenging trivia questions." (paragraph 2)

G. "Their results showed that 83 percent of the Internet group continued to consult Google in the second round, while only 63 percent of the memory group chose to do so." (paragraph 2)

H. "For this experiment, participants read forty trivia facts, such as 'An ostrich's eye is bigger than its brain,' and typed the statements into a computer file." (paragraph 5)

57. The effect of the Internet on a person's memory is illustrated in the passage through the presentation of studies that

A. examine how the use of search engines changes the way people evaluate and store information for future access.

B. highlight the difference between the capacity of the Internet and the ability of the human brain to locate information.

C. compare the type of information that can be obtained from the Internet with the type of information that is stored in the human brain.

D. emphasize the ease of obtaining information through search engines rather than remembering it without assistance.

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.

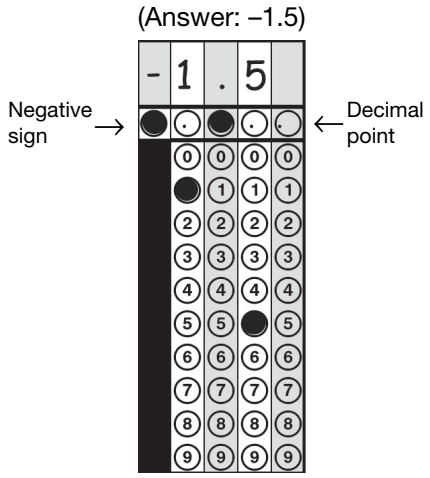
(5) Reduce (simplify) all fractions to lowest terms.

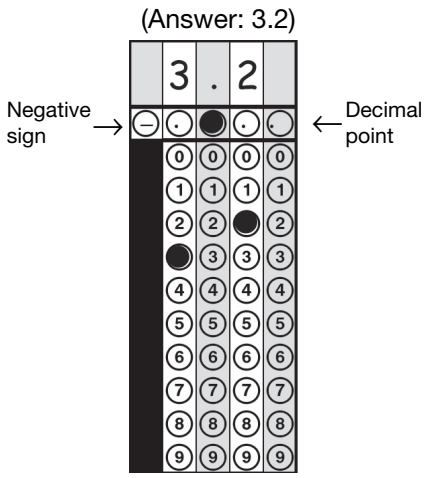
GRID-IN QUESTION NOTES

(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.





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. How many 5-digit numbers can be created using the digits 2, 3, 5, 7, and 8 without repeating any digits within that 5-digit number?

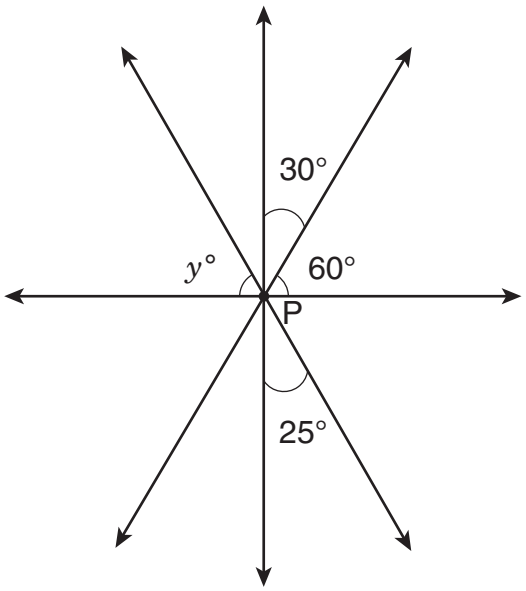
59. $$\frac{147 - x}{12} = 12$$

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

60. $\left|(-6) - (-5) + 4.2\right| - \left|3 - 9.6\right| =$

61. Tyler has completed 60 pages in his French workbook. This is 20% of the total number of pages in the workbook. How many pages are in the workbook?

62.



Four straight lines intersect at point P as shown above. What is the value of y?

Multiple Choice Questions

Questions 63–114

DIRECTIONS: Solve each problem. Select the best 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. If $x = 9$ and $y = -7$, what is the value of $x(x - 2y)$?

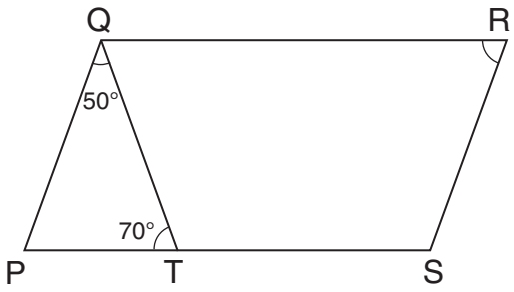
A. 18

B. 45

C. 144

D. 207

64.



In the figure above, PQRS is a parallelogram. The measure of $\angle PQT$ is $50°$, and the measure of $\angle PTQ$ is $70°$. What is the measure of $\angle QRS$?

E. 60°

F. 70°

G. 80°

H. 120°

65. $$M = 3N = \frac{P}{4} = Q + 5 = \frac{R}{7} > 0$$

Based on the statement above, which variable has the **greatest** value?

A. M

B. N

C. P

D. R

66.

DESSERT CHOICES

Dessert	Number of Times Ordered
Cookies	42
Pie	23
Cake	47
Ice Cream	48

The table above shows the number of times that different desserts were ordered at a restaurant. Based on this information, what is the probability of a customer ordering ice cream as a dessert?

E. 25%
F. 30%
G. 40%
H. 48%

67. To make party invitations, Macie could buy a package of paper for $10.50, or she could buy x individual sheets of the same paper for $0.15 each. What is the largest value of x that would make buying the individual sheets **less** expensive than buying the package?

A. 60
B. 65
C. 69
D. 70

68. At 1:00 p.m. one day, the temperature was 8 degrees above zero. During the rest of the day, the temperature fell 3 degrees per hour. What was the temperature at 7:00 p.m. that day?

E. $-13°$
F. $-10°$
G. $-7°$
H. $5°$

69. A bag contains 75 marbles that are red, blue, or green. The ratio of red to blue marbles is 15:7, and the ratio of blue to green marbles is 7:3. If 2 blue marbles are removed and replaced with 2 green marbles, what will be the new ratio of red to green marbles?

A. 3:1
B. 5:1
C. 15:3
D. 45:11

70. A roofing contractor uses shingles at a rate of 3 bundles for every 96 square feet of roof covered. At this rate, how many bundles of shingles will he need in order to cover a roof that is 416 square feet?

E. 5
F. 12
G. 13
H. 14

71. What is the least common multiple of 24, 6, and 18?

A. 36
B. 48
C. 72
D. 144

72. One day, the Early Bird Restaurant used 15 dozen eggs for 200 breakfast customers. At this rate, approximately how many dozen eggs are needed for 300 breakfast customers?

E. 20
F. 23
G. 25
H. 30

73. A cooler contains three types of beverages:
5 bottles of apple juice, 3 bottles of grape juice, and 6 bottles of orange juice. What is the probability that a bottle chosen at random from this cooler is **not** apple juice?

A. $\frac{1}{9}$
B. $\frac{5}{14}$
C. $\frac{9}{14}$
D. $\frac{2}{3}$

74. A large circular dinner plate has a radius of 20 centimeters. A smaller circular plate with a circumference of 20π centimeters is placed in the center of the larger dinner plate. What is the area of the part of the larger dinner plate that is not covered by the smaller plate?

E. 20π sq cm
F. 100π sq cm
G. 200π sq cm
H. 300π sq cm

75.

PRICES FOR NEWSPAPER ADVERTISING

Page Space	Price
$\frac{1}{4}$ page	$200
$\frac{1}{2}$ page	$350
full page	$600

The table above shows prices for newspaper advertising. A store purchased $\frac{1}{4}$ pages, $\frac{1}{2}$ pages, and full pages of page space in equal numbers for a total of $11,500. What is the total amount of page space the store purchased?

A. $1\frac{3}{4}$ pages

B. 10 pages

C. $16\frac{1}{2}$ pages

D. $17\frac{1}{2}$ pages

76. How many positive odd numbers satisfy the inequality $3x + 8 \leq 92$?

E. 13

F. 14

G. 17

H. 28

77. If $\frac{36}{y} = 4x$, what is the value of x when $y = 3$?

A. 3

B. 4

C. 9

D. 12

78. Points X , Y , and Z are on a straight line, and Y is between X and Z . Length $\overline{YZ} = \frac{3}{5}\overline{XY}$, and length $\overline{XY} = 20$ centimeters. What is the length of $\overline{XZ}$?

E. 12 cm

F. 24 cm

G. 30 cm

H. 32 cm

79. Bryana bought $1\frac{3}{4}$ yards of cloth at \$8.00 per yard. If there was an 8% sales tax, what was the total cost of the cloth?

A. \$12.96

B. \$14.08

C. \$15.12

D. \$16.08

80.



On the number line above, MN = $5\frac{5}{6}$. What is the position of point M?

E. $-7\frac{1}{6}$

F. $-4\frac{1}{2}$

G. $4\frac{1}{2}$

H. $7\frac{1}{6}$

81. A United States presidential coin is made from an alloy of four metals—copper, zinc, manganese, and nickel—with weights in the ratio of 177:12:7:4, respectively. The coin weighs a total of 8 grams. What is the weight of the zinc in this coin?

A. 0.28 g

B. 0.48 g

C. 0.96 g

D. 48 g

82. Jack scored a mean of 15 points per game in his first 3 basketball games. In his 4th game, he scored 27 points. What is his mean score for the first 4 games?

E. 15

F. 17

G. 18

H. 21

83. A cylindrical oil drum can hold 4,320 liters when it is completely full. Currently, the drum is $\frac{1}{3}$ full of oil. How many **kiloliters** of oil need to be added in order to fill the drum completely?

A. 1.44
B. 2.88
C. 4.32
D. 14.10

84. Nicole's age now is three times Carmen's age. If Carmen will be 17 in two years, how old was Nicole 5 years ago?

E. 38 yr
F. 40 yr
G. 45 yr
H. 50 yr

85. A chemical decays in such a way that the amount left at the end of each week is 20% less than the amount at the beginning of that same week. What percent of the original amount is left after two weeks?

A. 40%
B. 60%
C. 64%
D. 80%

86. If $w - 1$ is an odd integer, which one of the following **must** be an even integer?

E. $w + 1$
F. $2w - 1$
G. $2w - 2$
H. $2w + 1$

87. Three students stand at the starting line of a running track and begin running laps at the same time. Ann completes 1 lap every 2 minutes, Jack completes 1 lap every 3 minutes, and Lee completes 1 lap every 4 minutes. How many laps does Ann complete before all three runners are once again at the starting line at the same time?

A. 4
B. 6
C. 12
D. 20

88. Simplify this expression:

$$4(7 - 3x) - (5 - x)$$

E. $23 - 4x$

F. $23 - 11x$

G. $28 - 4x$

H. $28 - 12x$

89.

PET SURVEY

Number of Pets	Number of Students
0	12
1	16
2	7
3 or more	5

Amy surveyed students at her school about the number of pets they have. What is the probability that a student who participated in the survey has at least 2 pets?

A. $\frac{7}{40}$

B. $\frac{1}{12}$

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

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

90. A large container is partially filled with n liters of water. Ito adds 10 liters of water to the container, making it 60% full. If Ignacio adds 6 more liters of water, the container will be 75% full. What is the value of n?

E. 14

F. 15

G. 26

H. 30

91. $$5x^3 + 3x + 9 + \frac{1}{x^2}$$

If $x = 10$, what is the value of the expression above?

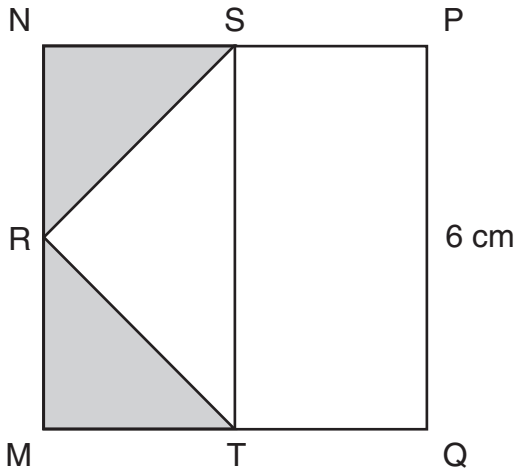
A. 2,539.01

B. 5,039.01

C. 5,039.1

D. 5,139

92.



R, S, and T are midpoints of the sides of square MNPQ, as shown above. What is the sum of the areas of the shaded triangles?

E. 9 sq cm
F. 12 sq cm
G. 18 sq cm
H. 36 sq cm

93. The Chens spend $5 of every $8 they earn on planned expenses. If the family earns $29,600 in one year, how much will they spend on planned expenses that year?

A. $1,850
B. $3,700
C. $5,920
D. $18,500

94. A pizza shop offers a choice of 3 sizes (small, medium, and large) and 7 different toppings. Different pizzas can be created by changing the size and/or the choice of toppings. If Cody wants to order a pizza with exactly 2 different toppings, how many different pizzas can he create?

E. 6
F. 21
G. 63
H. 126

95.

SURVEY OF CATS PER FAMILY

Number of Cats	Number of Families
0	15
1	42
2	35
3 or more	8

The table above shows the number of cats per family in 100 households in the Blaine neighborhood. By what **percentage** is the number of families with 1 cat greater than the number of families with 2 cats?

A. 7%
B. 10%
C. 17%
D. 20%

96. A wooden box has a square base. The height of this box is 3 times the length of one side of the base. If one side of the base is 3 feet long, what is the volume of this box?

E. 9 cu ft
F. 27 cu ft
G. 36 cu ft
H. 81 cu ft

97. On a bike trip, Rajiv traveled 65 kilometers in 5 hours, while Shaina traveled 72 kilometers in 4 hours. How much **less** was Rajiv's mean speed, in kilometers per hour (kph), than Shaina's?

A. 1
B. 5
C. 7
D. 9

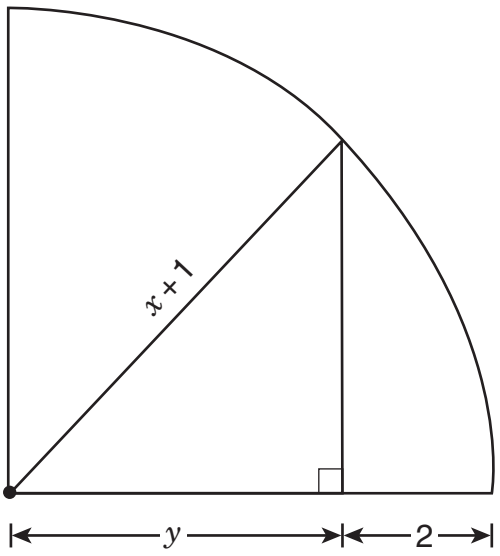
98. Points P, Q, R, and S represent -3, -1, 0, and 2, respectively, on a number line. How many units is the midpoint of $\overline{PQ}$ from the midpoint of $\overline{RS}$?

E. 1
F. 2
G. 3
H. 4

99. There are 1,000 cubic centimeters in 1 liter, and 1,000 cubic millimeters in 1 milliliter. How many cubic millimeters are there in 1,000 cubic centimeters?

A. 1,000
B. 10,000
C. 100,000
D. 1,000,000

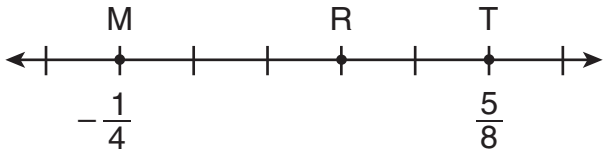
100.



In the quarter circle above, what is y in terms of x?

E. $x - 1$
F. $x + 1$
G. $\frac{x+1}{2}$
H. $\sqrt{\frac{(x+1)^2}{2}}$

101.



The hash marks on the number line above are evenly spaced. What is the coordinate of point R?

A. $\frac{7}{40}$

B. $\frac{9}{40}$

C. $\frac{11}{40}$

D. $\frac{21}{40}$

102. Phan chose an Internet service that charges $18.00 per month plus $0.024 per minute. Deion chose an Internet service that charges $30.00 per month for unlimited usage. At the end of the month, Phan's and Deion's charges were identical. For how many minutes did Phan use the Internet service that month?

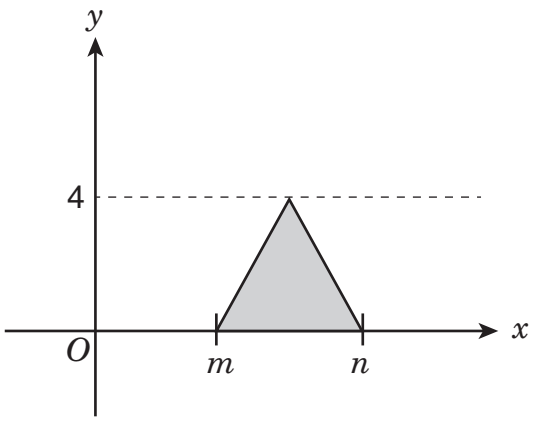
E. 50

F. 60

G. 100

H. 500

103.



What is the area of the shaded triangle shown above?

A. $m + n$

B. $n - m$

C. $2(n - m)$

D. $4(n - m)$

104. The decimal 0.06 can be written as the fraction $\frac{x}{50}$. What is the value of x?

E. 3

F. 6

G. 12

H. 30

105. In a sample of 50 cars at a local dealership, there are 12 red cars and 10 cars with backup cameras. Of the 12 red cars, 4 have backup cameras. If a car is selected at random from the given sample, what is the probability that **both** of the following are true: the car is **not** red and does **not** have a backup camera?

A. $\frac{3}{5}$

B. $\frac{16}{25}$

C. $\frac{19}{25}$

D. $\frac{4}{5}$

106.

ANIMAL CARDS

Number of Cards	Picture on Card
8	cat
6	dog
5	bird
4	fish
1	horse

The cards in the table above are mixed in a box. Which animal pictured on a card has exactly a 1 in 4 chance of being picked at random from the box?

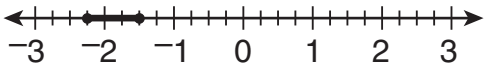
E. cat

F. dog

G. fish

H. horse

107. Which number line below shows the solution set for $2x - 2 \leq y \leq 4x + 10$ when $y = 1$?

A.


B.


C.


D.


108. $\frac{14}{21} = \frac{p}{7}$

In the equation above, what is the value of p?

E. $\frac{2}{3}$

F. 3

G. $\frac{14}{3}$

H. 14

109. A ball is selected at random from a box that contains 7 black balls, 14 green balls, and 21 red balls. What is the probability that the ball selected is black?

A. $\frac{1}{6}$

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

C. $\frac{1}{3}$

D. $\frac{5}{6}$

110. At North High School, a survey asked two questions, Question A and Question B. For each question, students could answer either "yes" or "no." Of the 800 students who responded to the survey, 720 answered "yes" to Question A, and 640 answered "yes" to Question B. What is the **least** possible number of these students who could have answered "yes" to **both** questions?

E. 80

F. 160

G. 560

H. 640

111. Raoul is at least 3 years older than Vahn. Which of the following inequalities gives the relationship between Raoul's age (r) and Vahn's age (v)?

A. $r - v \geq 3$

B. $r - v \leq 3$

C. $3 - v \leq r$

D. $3 - r \leq v$

112. 1 sind = 5.6 ricks

1 sind = 12.88 dalts

Using the conversion above, how many dalts are equal to 1 rick?

E. 0.43

F. 2.30

G. 7.28

H. 18.48

113. There are now x cans stacked on a shelf that holds 36 cans when full. If 4 of these cans were removed, the shelf would be half full. What is the value of x?

A. 14

B. 16

C. 18

D. 22

114. Carlos tossed a paper cup in the air 50 times and found that the probability of it landing on its side was 72%. If he tosses the cup in the air 150 **more** times, what is the total number of times he can expect the cup to land on its side?

E. 72

F. 108

G. 144

H. 158

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

FORM B SAMPLE TEST – ENGLISH LANGUAGE ARTS EXPLANATIONS OF CORRECT ANSWERS

REVISING/EDITING PART A

1. The question asks for the best way to combine the sentences to clarify the relationship between the ideas.

A. Incorrect. Even though the two ideas from the original sentences are incorporated into the combined sentence, the use of the conjunction "while" in the first part of the sentence suggests that there is a simultaneous but unrelated relationship between the two ideas, which is incorrect.

B. Incorrect. The combined sentence incorporates the ideas from both sentences, but the conjunction "although" suggests that scientists were allowed to collect data even though there were flyby missions, which is an inaccurate way to express the relationship between the ideas.

C. **CORRECT.** This sentence is the best way to combine the sentences because it accurately reflects the relationship between the ideas by using the nonrestrictive clause "which allow scientists to collect data about the planet and its moons" to describe the purpose of the flyby missions. (Nonrestrictive clauses are adjective clauses that give additional information about a word or phrase. They sometimes begin with the relative pronoun "which" and are set off by commas.) The idea that the missions "have been happening since 1973" follows the nonrestrictive clause.

D. Incorrect. The combined sentence uses the conjunction "but" to connect the ideas in the two original sentences. This suggests an adverse relationship between ideas, which is an inaccurate way to connect the ideas expressed in the original sentences.

2. The question asks for the identification of the sentence that has an error in its construction and should be revised.

E. Incorrect. There are no errors in the structure of sentence 1. The clause "who played in the Long Island area at the time" correctly modifies the noun "New York Nets." "Who" is the correct relative pronoun to serve as the subject of the modifying clause because it refers to people rather than objects or things.

F. **CORRECT.** Sentence 2 contains a structural error. The current placement of the clause "where the Nets played for thirty-five seasons" suggests the clause is modifying the term "financial troubles," which is illogical. The clause "where the Nets played for thirty-five seasons" should immediately follow the location, "New Jersey." A revised version of the sentence might read, "After the team had financial troubles, the owner of the Nets decided to take the team to New Jersey, where the Nets played for thirty-five seasons."

G. Incorrect. There are no errors in the structure of sentence 3. The phrase "including two appearances in the NBA finals" is a nonrestrictive phrase that provides further detail about the team's "sixteen playoff appearances." The phrase is set off by a comma because it is not essential to understanding the meaning of the sentence.

H. Incorrect. There are no errors in the structure of sentence 4. The clause "where the team now plays under the name the Brooklyn Nets" is a nonrestrictive clause that provides further detail about the team after its move back to New York in 2012. The phrase is set off by a comma because it is not essential to understanding the meaning of the sentence.

---

3. The question asks how the paragraph should be revised.

A. Incorrect. The revisions in this option introduce new errors. The word "spent" is correct in the past tense because that is the tense used throughout the rest of the paragraph. Additionally, adding a comma after the word "play" would be incorrect because it would separate the prepositional phrase "at the community theater" from the rest of the sentence.

B. Incorrect. The revisions in this option introduce new errors. The word "did" is correct as written in the past tense because the past tense is used throughout the paragraph. There is no comma needed after the word "projection" because "so" is not functioning as a conjunction but rather as part of the conjunction phrase "so that," which does not take a comma.

C. **CORRECT.** Changing the word "studies" from the present tense to the past tense "studied" is necessary to match the past tense established in the paragraph ("spent," "recited"). Additionally, the comma after the word "emotions" needs to be removed because the words "emotions and motivations" are part of a group (series) of two elements, and when there are only two elements in a series, a comma is not used.

D. Incorrect. The revisions in this option introduce new errors. The word "recited" is correct as written in the past tense because the past tense is used throughout the paragraph. Also, removing the comma after "times" is incorrect because the comma is needed in order to separate the modifying phrase "making slight adjustments and improvements to her performance each time" from the main clause.

4. The question asks for the revisions that are needed to correct errors in the paragraph.

E. Incorrect. The revisions introduce new errors. The colon after "wonder" is needed to set off the question "what is the difference between the two?" from the rest of the sentence. In addition, changing the verb "is" to "are" would be incorrect with the use of the singular noun "difference," which is the subject in the question.

F. Incorrect. The revisions introduce new errors. The comma following the introductory phrase "To start with" helps with clarity and is needed to separate the phrase from the rest of the sentence. Changing "it is" to "they are" would be incorrect with the use of the singular noun "butterfat content," which is what the words "it is" refer to in the sentence.

G. Incorrect. The revisions introduce new errors. The comma following "process" is necessary to set off the nonrestrictive clause "which adds less air to the frozen treat" from the rest of the sentence. This clause is considered a nonrestrictive clause because it provides additional, but not essential, information about the mixing process. Changing the verb "makes" to "make" would be incorrect with the use of the singular noun "mixing process," which is the subject of the sentence.

H. CORRECT. Deleting the comma after "gelato" would include the clause "and allow it to melt more quickly" with the first part of the clause "which enhances the texture and flavor of the gelato." The word "and" between the two verb phrases ("enhances the texture and flavor of the gelato" and "allow it to melt more quickly") indicates that the two verb phrases share a subject, "which" (referring to the act of serving gelato 10 to 15 degrees warmer than ice cream). The two ideas should not be separated by a comma within the clause. The entire clause "which enhances the texture and flavor of the gelato and allow it to melt more quickly" should be separated from the main clause only by the comma after "cream" because the entire clause is a nonrestrictive clause. This clause provides additional, but not essential, information about the purpose of serving gelato at a warmer temperature than when serving ice cream. Changing the verb "allow" to "allows" is also necessary to match the use of the singular noun "gelato," which is the subject of the sentence.

REVISING/EDITING PART B

Martial Arts for the Mind and Body

5. The question asks for the best way to combine sentences 2 and 3.

A. Incorrect. This way of combining sentences 2 and 3 places unnecessary emphasis on characterizing historians, and it does not clearly show the contrasting relationship between the idea from sentence 2 that historians do not know the exact origins of martial arts and the idea in sentence 3 that historians know that martial arts have a long history.

B. **CORRECT.** This option is correct because the word "while" at the beginning of the sentence best indicates the contrast between the ideas in sentences 2 and 3. Sentence 2 states that historians do not know the exact origins of martial arts ("unsure of exactly when and where"). Sentence 3 describes what historians do know about these origins ("practiced by several different societies for many centuries"). This combination indicates that historians have a general understanding about the origins of martial arts even though they cannot confirm the exact details.

C. Incorrect. Starting this sentence with the word "because" indicates a cause-and-effect relationship that does not exist between the ideas in the original sentences. The idea from sentence 3, that historians know that martial arts have been practiced for many years, did not cause the idea in sentence 2, that historians do not know exact details about the origins of martial arts.

D. Incorrect. The conjunction (connecting word) "and" does not clearly show how the ideas in sentences 2 and 3 are related. While "and" can be used to combine related sentences, it does not demonstrate the contrast between the idea in sentence 2, that historians do not know the exact origins of martial arts, and the idea in sentence 3, that historians know that martial arts have a long history.

6. The question asks where sentence 10 should be moved to improve the organization of the second paragraph.

E. Incorrect. Starting this paragraph with sentence 10 would weaken the paragraph's organization because it would place a supporting detail sentence (sentence 10) before the topic sentence (sentence 6). Sentence 6 belongs at the beginning of the paragraph because it introduces the topic—the qualities of discipline, focus, and respect. Sentence 10 supports the key idea of the paragraph, that these qualities can be developed through the study of martial arts. If sentence 10 preceded sentence 6, the transitional phrase "for example" would refer to an unspecified topic and idea.

F. Incorrect. Sentence 6 presents the idea that "discipline, focus, and respect are important qualities for everyone to have," but the example in sentence 10 does not directly relate to this idea. Sentence 10 explains how martial arts develop these qualities, not why they are important qualities to have. Because sentence 10 is not directly related to the idea in sentence 6 (the qualities are important), it should not follow sentence 6.

G. Incorrect. Sentences 7 and 8 should not be separated, because the idea presented in sentence 8—that "the study of martial arts can provide an opportunity to develop these skills"—is directly related to the idea from sentence 7—that the skills of discipline, focus, and respect "are not innate; they must be learned and practiced." Sentence 10 supports the idea from sentence 8 by describing an example from a typical martial arts class, so sentence 10 should not precede sentence 8.

H. CORRECT. This option is correct because sentence 10 logically follows and supports the idea in sentence 8 that "the study of martial arts can provide an opportunity to develop" the qualities of discipline, focus, and respect. Sentence 10 explains this idea with examples, describing three specific ways that students in a typical tae kwon do class develop discipline, focus, and respect—by "diligently practicing," "listening carefully," and "bowing to the instructor and following directions."

---

7. The question asks for the revision of sentence 12 that best maintains the formal style established in the passage.

A. Incorrect. The phrases "A lot," "put up with," "difficult things," and "do well in school" are worded informally; therefore, this sentence does not consistently maintain the formal style established in the passage.

B. Incorrect. The phrases "deal with," "tough situations," "stay on top of," and "do well in life" are worded informally; therefore, this sentence does not consistently maintain the formal style established in the passage.

C. CORRECT. This option is correct because it uses clear and scholarly wording throughout the whole sentence. The phrases "many teenagers," "encounter challenges," and "succeed both academically and personally" make the sentence's style more consistently formal than the other options.

D. Incorrect. The phrases "A lot," "face problems," and "keep up with" are worded informally; therefore, this sentence does not consistently maintain the formal style established in the passage.

8. The question asks for the transitional phrase that should be added to the beginning of sentence 17.

E. CORRECT. This option is correct because it best shows the chronological progression between the ideas in sentence 16—progressing through levels of achievement "requires students to take responsibility and be accountable for achieving set goals"—and the ideas in sentence 17—"students gain confidence and experience companionship with other students who are progressing through the ranks." The transitional phrase "over time" shows the gradual nature of the relationship between the cause in sentence 16 and the effect in sentence 17.

F. Incorrect. Though the ideas in sentences 16 and 17 are related, "in fact" does not show the correct relationship between the ideas. The transitional phrase "in fact" emphasizes an idea by giving a detail or example of greater intensity, but the ideas in sentence 16—progressing through levels "requires students to take responsibility and be accountable for achieving set goals"—and the ideas in sentence 17—"students gain confidence and experience companionship with other students who are progressing through the ranks"—are related by cause and effect rather than by (degree of) intensity.

G. Incorrect. The transitional phrase "even so" is used to connect opposing ideas, but the ideas in sentence 16—progressing through levels "requires students to take responsibility and be accountable for achieving set goals"—does not contrast with the ideas in sentence 17—"students gain confidence and experience companionship with other students who are progressing through the ranks."

H. Incorrect. Although the transitional phrase "for instance" connects an idea with a related example, it does not show the cause-and-effect relationship between the ideas in sentence 16—progressing through levels "requires students to take responsibility and be accountable for achieving set goals"—and the ideas in sentence 17—"students gain confidence and experience companionship with other students who are progressing through the ranks."

---

9. The question asks for the sentence that would best follow and support sentence 18.

A. Incorrect. Though the idea of advancing one's career is certainly appealing for adults, this benefit is not directly tied to "health and fitness" and, therefore, does not support sentence 18.

B. Incorrect. While the passage does discuss potential benefits related to discipline, focus, and confidence (sentences 6 and 11), sentence 18 is solely related to health and fitness benefits and should not be followed by a description of "other skills."

C. CORRECT. This option is correct because sentence 18 conveys that the greatest benefit of practicing martial arts is "health and fitness," and the sentence illustrates some specific ways that martial arts training helps improve physical fitness—"strengthen their heart, boost endurance, improve balance, and develop muscle tone."

D. Incorrect. Some readers may choose this option because sentence 5, sentence 15, and sentence 18 discuss the physical aspects of practicing martial arts, but the idea that people who practice martial arts are concerned about their overall health does not provide further details about the connection between training and health.

10. The question asks for the concluding sentence that best replaces sentence 23 and supports the topic presented in the passage.

E. Incorrect. The phrase "the skills needed to progress in rank" is vague, and progressing in rank is not related to the overall topic of the passage, which is the benefits of studying martial arts. The topic of the passage is not the "many ways to begin studying martial arts" or how "people can easily discover" the benefits of martial arts.

F. **CORRECT.** This option is correct because it best supports the topic of the passage—the benefits of studying martial arts—by stating two reasons why people should study martial arts: to "experience the satisfaction of achieving goals while also improving themselves."

G. Incorrect. Some readers may choose this option because it refers to the benefits of martial arts, but the word "because" and the detail that "enrollment in martial arts courses has increased" make this sentence unrelated to the overall topic of the passage, which is about the benefits of studying martial arts, not the number of people who participate.

H. Incorrect. Although the benefits of studying martial arts are described for both teens (in the third paragraph) and adults (in the fourth paragraph), the topic of the passage is the overall benefits of studying martial arts, which include mental discipline (discussed in the first, second, and third paragraphs) in addition to health benefits. Furthermore, the passage does not compare the health effects of studying martial arts across age groups.

Wolves of the Sea

11. The question asks how the details about Darimont in paragraph 1 contribute to a central idea of the passage.

A. Incorrect. Although paragraph 1 includes the detail that the Great Bear Rainforest is a protected area, finding an ideal location to study wolves is not a central idea of the passage. Additionally, the paragraph does not describe Darimont's beliefs about the Great Bear Rainforest.

B. **CORRECT.** Paragraph 1 explains why Darimont wanted to consult with Chester Starr, an elder of the Heiltsuk Nation: "When biologist Chris Darimont began to study these wolves, he wanted to confer with local First Nations groups, as aboriginal Canadians are known, in order to learn what they knew about these wolves." The details in paragraph 1 show that Darimont valued Starr's perspective ("What Starr had to say about the wolves changed Darimont's perception of the animals"), even though it was different from Darimont's own perspective at that time.

C. Incorrect. Paragraphs 1 and 2 show that Darimont did not initially believe that the mainland wolves and the coastal wolves were different groups. Therefore, the details in paragraph 1do not provide evidence that Darimont chose Great Bear Rainforest because of an expectation that there were separate groups of island wolves and timber wolves. Instead, he chose the Great Bear Rainforest for the opportunity to study what he had presumed to be one group of wolves.

D. Incorrect. Although Darimont sought out Chester Starr, an elder of the Heiltsuk Nation, before beginning his research, Darimont's purpose in doing so was not to request Starr's permission to study the wolves but to learn from Starr's expert knowledge of the area and its wolves ("When biologist Chris Darimont began to study these wolves, he wanted to confer with local First Nations groups, as aboriginal Canadians are known, in order to learn what they knew about these wolves" [paragraph 1]).

12. The question asks why the author includes details about the conversation between Starr and Darimont in paragraph 2.

E. Incorrect. The details in paragraph 2 do not explain why Starr had closely observed the two groups of wolves. Instead, they convey that Starr believed the wolves to be separate groups ("Starr asked Darimont which wolves he and his team were going to study—the timber wolves (mainland wolves) or the coastal wolves on the islands"), a supposition that intrigued Darimont and ultimately changed the course of his research study.

F. Incorrect. Although paragraph 1 indicates that Darimont did hope to work with Starr ("he wanted to confer with local First Nations groups, as aboriginal Canadians are known, in order to learn what they knew about these wolves"), Darimont did not initially plan to study both groups of wolves in the area because, as the conversation in paragraph 2 indicates, he did not initially know they were two distinct groups of wolves.

G. Incorrect. The details about the conversation in paragraph 2 highlight that Darimont was eager to learn from Starr's knowledge of the wolves ("Darimont was intrigued by Starr's classification of the wolves as two different groups"), but they do not indicate that Darimont expected Starr's help to find the wolves.

H. **CORRECT.** According to paragraph 2, Starr wanted to know which group of wolves Darimont planned to study—"the timber wolves (mainland wolves) or the coastal wolves on the islands." The author states that the question "took Darimont by surprise," adding that "Darimont was intrigued by Starr's classification of the wolves as two different groups." The author adds that Darimont was initially "hesitant to accept the idea" that the wolves were separate groups but ultimately spent years studying the two groups of wolves. These details indicate that the question Starr posed to Darimont forced Darimont to reevaluate his initial assumption "that the wolves that are sometimes spotted swimming between islands and eating salmon are the same wolves that live on the mainland" and investigate Starr's observation that the wolves had separated into two distinct groups.

13. The question asks what the phrase "hard biological evidence" in the sentence from paragraph 4 conveys about the goal of the research team.

A. Incorrect. Although the research team followed a labor-intensive procedure, the phrase "hard biological evidence" refers to the product of their scientific research (the genetic markers revealed within the DNA samples), not the process by which they collected it. Their goal was not to develop a procedure for data collection but to determine precisely how many species of wolf were present in the area.

B. **CORRECT.** The research team wanted to prove or disprove the theory that two separate groups of wolves were present in the area, an idea that was already supported by the observations of scientists and local indigenous people. The phrase "hard biological evidence" conveys that the scientists wanted to bolster their observations of the wolves with concrete scientific data about the wolves' biological makeup. The goal of the researchers was to use the data to prove how many species of wolf were present in the area of the study.

C. Incorrect. The research team gathered extensive data during their study ("After collecting and analyzing the DNA in 800 samples of gray fur and wolf waste" [paragraph 4]), and their goal in doing so was to evaluate a single theory about the wolves: that the wolves had evolved into two separate and genetically distinct species. The research team did not conduct the study in order to evaluate multiple theories about the diets of the wolves.

D. Incorrect. The phrase "hard biological evidence" does not suggest that the research team was hoping to discover if the new data would provide information that was different from previous studies. In fact, the goal of the research team was to use the genetic data to supplement their initial sources of information about the wolves and their own observations from the field.

14. The question asks for the most likely reason why the author uses the word "admits" in paragraph 5.

E. Incorrect. The word "admits" highlights the surprising difference between Darimont's initial idea and the conclusion he ultimately drew from the results of the study. Though Darimont's genetic research did, in fact, verify the field observations of the wolves, this does not explain the author's use of the word "admits" in paragraph 5.

F. Incorrect. The conclusion that Darimont reached was actually quite original, since biologists widely believed the two separate groups of wolves to be one ("Biologists had always believed that the wolves that are sometimes spotted swimming between islands and eating salmon are the same wolves that live on the mainland," [paragraph 2]). The author uses the word "admits" in paragraph 5 to emphasize how unexpected Darimont found the conclusion to be ("The distances between the mainland and the islands are small, less than a mile. Why would the wolves on the islands be any different from the wolves on the mainland?" [paragraph 2]), not to indicate that the study was a disappointment.

G. **CORRECT.** The use of "admits" emphasizes that Darimont found the idea of two species of wolves " 'totally bizarre at first' " (paragraph 5) but ultimately proved it to be correct. Paragraph 2 suggests that Darimont, like other scientists, "had always believed that the wolves that are sometimes spotted swimming between islands and eating salmon are the same wolves that live on the mainland." Therefore, the results of the study were likely to strike biologists as bizarre, and the use of the word "admits" in paragraph 5 highlights Darimont's shift from doubt to confirmation.

H. Incorrect. Darimont's team conducted the research that helped him confirm Starr's idea and draw the conclusion that the wolves were separate species ("After collecting and analyzing the DNA in 800 samples of gray fur and wolf waste, researchers could produce hard biological evidence that sea wolves had genetic markers that made them distinct from the mainland wolves" [paragraph 4]). However, the opinions of Darimont's research team are not described in the passage, and the word "admits" does not indicate that they disagreed with his conclusion.

15. The question asks for the sentence from the passage that best supports the idea that sea wolves had successfully adapted to living on the islands.

A. CORRECT. This sentence from paragraph 3 describes a significant difference in the diets of the mainland and sea wolves: the mainland wolves "almost exclusively eat meat, such as deer and elk, and teach their young to hunt for land animals," whereas the sea wolves had adapted to the point where they derive "as much as 90 percent of their nutrition from the sea and teach their young to dig for clams and to catch fish." This sentence emphasizes the dietary difference between the two groups of wolves and best supports the idea that sea wolves had successfully adapted to living on the islands.

B. Incorrect. Although this sentence from paragraph 3 describes one technique that the sea wolves used to hunt, it does not offer evidence as strong as that provided by the preceding sentence, which explains that sea wolves were able to derive "as much as 90 percent" (paragraph 3) of their sustenance from the sea alone (versus the mainland wolves, which "almost exclusively eat meat" from land animals [paragraph 3]).

C. Incorrect. Although this sentence from paragraph 3 states that "some sea wolves live their entire life on the islands," it does not provide strong evidence of the necessary adaptations—namely, how these wolves were able to successfully live their whole lives on the islands. Living on the islands was not necessarily an adaptation in and of itself; the adaptation was the sea-based diet that enabled the sea wolves to live on the islands without access to land animals.

D. Incorrect. Although this sentence from paragraph 4 presents Darimont's hypothesis that "a change in habitat led to the eventual genetic differences" between the wolves, the sentence does not describe any of the sea wolves' adaptations nor best support the idea that the sea wolves successfully adapted to living on the islands.

---

16. The question asks how a change in habitat most affected the wolf population of the Great Bear Rainforest over time.

E. Incorrect. Although the island wolves learned new hunting techniques ("dig for clams and to catch fish," "sneak up on a seal sunning itself on a rock and make a leaping attack from the water" [paragraph 3]), there is no evidence in the passage that these hunting techniques were developed in response to scarcity of prey. The most significant effect of the change in habitat was not an influence on hunting techniques but the behavior differences that evolved because of the isolation of the groups of wolves from each other.

F. Incorrect. The change in habitat did not cause the wolves to form smaller packs but rather served to create distinctive behaviors because of the isolation of one pack from another, eventually causing the groups of wolves to became distinct species.

G. CORRECT. The change in habitat caused the wolves to gradually become two distinct species. Though the "sea wolves regularly swim between islands" and "some salmon-eating mainland wolves come and go from the islands," the "sea wolves are full-time island residents" (paragraph 3). This behavioral adaptation to their environment caused the seas wolves to "became more isolated" from the mainland wolves; as a result, the two groups "rarely mated with each other," and "over time the two types of wolves became more distinct" (paragraph 4).

H. Incorrect. Only the sea wolves adapted their diet. They did this not because different food sources became available in the area but because they were in an entirely different area from the mainland wolves.

Excerpt from "How We Made the First Flight"

17. The question asks how paragraph 1 introduces the idea that the Wright brothers knew that their flight attempt was risky.

A. **CORRECT.** Paragraph 1 describes the Wright brothers hanging out "the signal" to notify the lifesaving crew to stand by as they attempted flight; the need for lifesaving experts to be available in case of an accident introduces the idea that the attempted flight might crash.

B. Incorrect. The specifics on the speed of the wind by themselves do not emphasize the danger of the flight. While the brothers admitted that the strong wind posed certain risks, they also noted that the windy conditions might make landing safer ("estimated that the added dangers in flight would be partly compensated for by the slower speed in landing" [paragraph 1]).

C. Incorrect. A slower landing was expected as a result of the windy conditions, but it was not part of a plan to increase the safety of the flight.

D. Incorrect. While the Wright brothers' initial decision to wait to see whether the wind would die down does suggest they were concerned about the safety of the flight, the explanation of their decision to proceed with the flight shows that they expected one benefit from the poor weather: "the slower speed in landing" (paragraph 1).

---

18. The question asks how the sentence from paragraph 4 contributes to the development of ideas in the excerpt.

E. Incorrect. The sentence from paragraph 4 does not refer to the challenge of the winter conditions during the flight attempt.

F. Incorrect. While the sentence from paragraph 4 specifically references a previous flight several days earlier, it does not state how many attempts came before Wilbur's attempt on December 14.

G. **CORRECT.** The sentence from paragraph 4 indicates that the Wright brothers had agreed to take turns attempting to achieve the first flight, which suggests their eagerness to each be the first to successfully fly the machine.

H. Incorrect. Orville's trial came about simply because the brothers took turns, which would suggest that there was no greater likelihood of success or reason to be more confident at that moment than there had been for previous attempts.

19. The question asks why the photograph mentioned in paragraph 4 is significant.

A. Incorrect. According to paragraph 4, the photograph was not taken immediately after the tethering wire was released but rather after an intervening period during which "Wilbur ran at the side of the machine, holding the wing to balance it on the track." The picture was not taken until "the machine had reached the end of the track," which occurred after a "forty-foot run" (paragraph 4).

B. **CORRECT.** The photograph mentioned in paragraph 4 is significant because it provides proof that the machine did, in fact, take flight: "One of the Life Saving men snapped the camera for us, taking a picture just as the machine had reached the end of the track and had risen to a height of about two feet. The slow forward speed of the machine over the ground is clearly shown in the picture by Wilbur's attitude. He stayed along beside the machine without any effort."

C. Incorrect. The photograph mentioned in paragraph 4 is described as showing the plane moving forward through the air at a height of two feet, but while the effect of the wind may be visible, it is not why the photo is significant. Instead, the photograph provides proof that the plane is, in fact, moving through the air ("One of the Life Saving men snapped the camera for us, taking a picture just as the machine had reached the end of the track and had risen to a height of about two feet. The slow forward speed of the machine over the ground is clearly shown in the picture by Wilbur's attitude").

D. Incorrect. Although the plane is shown at a height of two feet in the photograph mentioned in paragraph 4, the picture documents only one moment of the plane's flight and does not provide proof that the pilot had to gradually increase the height of the plane in the air.

---

20. The question asks how the details in paragraph 5 about the uneven nature of the flight convey a central idea of the excerpt.

E. Incorrect. Paragraph 5 explains that the rudder was unbalanced and the effect that this issue had on the flight, but the rudder was only part of the reason for the short flight. The length of the flight is not a central idea of the excerpt.

F. Incorrect. Although paragraph 5 does explain that the equipment contributed to the difficulty of controlling the plane's flight, the lack of control over the flight is not a central idea of the excerpt, which is the fact that the Wright brothers achieved a successful flight in spite of the challenges involved.

G. **CORRECT.** The details in paragraph 5 describe the difficulties that the weather conditions and mechanical issues presented and how Orville's flight was successful despite the issues. The ability of the Wright brothers to overcome difficult circumstances and complete the first flight is a central idea of the excerpt.

H. Incorrect. While paragraph 5 does emphasize the difficulty caused by the wind, it does not describe a "gradual change" in the wind, only that it was "irregular."

21. The question asks how the sentence from paragraph 5 helps convey Orville Wright's perspective about the first flight.

A. Incorrect. Although the sentence from paragraph 5 refers to the velocity of the wind during the flight, there is no indication that Orville felt a sense of frustration with the windy conditions. Instead, the sentence emphasizes the "speed of the machine relative to the air" and presents the equivalent flight length if the machine had flown through calm air ("the length of the flight was equivalent to a flight of 540 feet made in calm air"), details that emphasize the importance of the Wrights' accomplishment.

B. **CORRECT.** In the sentence from paragraph 5, Orville uses the wind velocity and the machine speed to highlight the distance that the plane covered while in the air and to determine the distance that it would have flown on a day with calm winds, which emphasizes the magnitude of the accomplishment.

C. Incorrect. Since Orville does not suggest in the sentence from paragraph 5 how far the plane traveled under the actual conditions of high winds, the comparison is incomplete. Additionally, this statement does not address the reason that he would make such a comparison, which allowed him to describe the flight in more impressive terms (540 feet versus 120 feet).

D. Incorrect. Unlike the wind velocity calculations made in preparation for the flight, which might help in determining the success of future flights, the comparative calculations that Orville provides in the sentence from paragraph 5 help interpret the results of the first flight (by describing how fast and far the machine flew relative to the flying conditions) and thereby communicate its success. The calculations of the first flight's relative speed and equivalent distance would not affect the success of future flights, but the information does provide context for understanding the Wright brothers' accomplishment.

---

22. The question asks how the sentence contributes to paragraph 5.

E. Incorrect. The sentence focuses on the "sudden dart" of the plane, which ended the flight. According to the paragraph, this sudden dart was caused by the difficulty of controlling the front rudder "on account of its being balanced too near the center." The sentence does not detail the need for the pilot to have quick reflexes.

F. **CORRECT.** The sentence presents the idea that the difficulty of operating the machine brought the flight to a quicker end than it might otherwise have had. According to paragraph 5, "control of the front rudder was difficult on account of its being balanced too near the center. This gave it a tendency to turn itself when started." These sentences show that one such "dart" shortened the flight.

G. Incorrect. Although it describes the abrupt end of the flight, the sentence does not describe the shift in wind speed. The word "dart" refers instead to a change in the height, or altitude, of the machine.

H. Incorrect. Although it includes the detail that the flight ended "a little over 120 feet from the point at which it rose into the air," the sentence does not provide an overview of the entire flight's progression. The sentence from paragraph 5 omits the flight's takeoff and only describes its rather abrupt ending.

23. The question asks what idea is most clearly conveyed by the words "only," "nevertheless," and "finally" in the sentence from paragraph 5.

A. Incorrect. Although the duration of the flight was short and a successful flight had taken a long time to achieve, the words in the sentence from paragraph 5 are used to emphasize the remarkable nature of the flight, not the length of time it had taken the Wright brothers to be successful.

B. Incorrect. While it is easy to imagine that the Wright brothers had hope for longer flights, the words in the sentence from paragraph 5 do not relate directly to this sentiment; instead, they describe the groundbreaking success of their flight.

C. Incorrect. While the capabilities of the aircraft were demonstrated during the flight, the words in the sentence from paragraph 5 apply not only to the machine but also to the efforts of the people who designed it, built it, and actually made it fly.

D. CORRECT. The words in the sentence from paragraph 5 suggest that, though the first flight may not have lasted very long or taken the pilot very far, the Wright brothers accomplished something no one had been able to do before: successfully pilot an airplane in flight.

---

24. The question asks which sentence from the excerpt best supports the idea that the Wright brothers had to adapt their plans for the flight in order to accommodate weather conditions.

E. Incorrect. Although the sentence from paragraph 1 mentions the rainy weather and frozen puddles, it does not specifically explain how these weather conditions forced the brothers to adapt their plans for the flight.

F. CORRECT. The sentence from paragraph 1 reveals that the Wright brothers adapted by making a risk calculation, based on the wind speed, before the flight. The high speed of the wind could cause difficulties in flight while simultaneously allowing for a slower, more controlled landing.

G. Incorrect. The sentence from paragraph 4 does mention wind, but it describes what Orville was doing during the attempted flight, not the factors he considered before the flight in order to adapt the plan.

H. Incorrect. Although the sentence from paragraph 5 mentions the "irregularity of the air" during the flight, the sentence does not describe how the brothers adapted their plans for the flight based on the weather.

25. The question asks how the use of chronological structure contributes to the development of ideas in the excerpt.

A. **CORRECT.** Through the chronological structure, Orville addresses all stages of the flight in a way that builds from flight concerns and preparations for takeoff to his experiences during the flight and his successful landing.

B. Incorrect. While obstacles are presented within the excerpt, the chronological structure emphasizes the events that ended in the successful achievement of flight on that day rather than how the Wright brothers overcame obstacles.

C. Incorrect. The chronological structure of the excerpt does not show that the Wright brothers applied lessons learned from their previous attempts at flight; instead, the structure describes Orville's December 17 attempt.

D. Incorrect. While Orville's narrative certainly shows a strong need to analyze wind speed, this idea is not conveyed through the chronological structure of the excerpt. Additionally, the description of the first flight on December 17 indicates that it did not take place in ideal conditions ("We realized the difficulties of flying in so high a wind" [paragraph 1] and "The course of the flight up and down was exceedingly erratic, partly due to the irregularity of the air" [paragraph 5]).

Excerpt from "The Spirit of the Herd"

26. The question asks which sentence from the excerpt best explains why Wade reserved Peroxide Jim for "emergency work" (paragraph 1).

E. Incorrect. While the sentence from paragraph 1 refers to Peroxide Jim as being a superior horse, it does not tell why he would be useful in an emergency. The mention of Peroxide Jim's superiority does not describe the attributes that would make him an appealing choice for use in an emergency.

F. Incorrect. The sentence from paragraph 10 does not describe the actions of Peroxide Jim. The sentence describes what Wade and the horse were experiencing, but it does not include any reference to how Peroxide Jim was responding to the situation.

G. Incorrect. The sentence from paragraph 11 describes Wade's experiences and does not focus on the actions of Peroxide Jim. It reveals Wade's awareness of the danger he was in, but the only reference to Peroxide Jim in this sentence is the description of the horse having to work harder to run on the stonier ground as they neared the edge: from "the plunging of the horse," Wade knew "that the ground was growing stonier, that they were nearing the rocks." This quotation does not show that Peroxide Jim was the right horse to use for emergency work because it does not indicate, at this point in the text, that he was responding in a way that saved the herd or Wade.

H. **CORRECT.** The sentence from paragraph 16 describes Peroxide Jim's high level of skill and ability to perform in a life-and-death situation. Not only did Peroxide Jim recognize the emergency immediately ("From the flash of the lightning the horse had taken the bit"), but the horse also proved to have the physical capability ("had covered an indescribably perilous path at top speed, had outrun the herd and turned it from the edge of the rim rock") and the mental toughness ("without a false step or a tremor of fear") required to respond appropriately to the dangerous situation.

27. The question asks how paragraphs 1–2 contribute to the development of the central idea of the excerpt.

A. **CORRECT.** The description of Peroxide Jim in paragraph 1 indicates that the horse was a fine animal ("Along with the wagon had come the fresh horses—one of them being Peroxide Jim, a supple, powerful, clean-limbed buckskin, a horse, I think, that had as fine and intelligent an animal-face as any creature I ever saw" [paragraph 1]). The statement in paragraph 2 that Wade's "faith in Peroxide Jim was complete" supports the central idea of the excerpt that Wade believed in Peroxide Jim's abilities even before the horse turned the herd and saved the cattle.

B. Incorrect. Paragraphs 1–2 do not emphasize Wade's high expectations for himself, nor are these expectations a central idea of the excerpt. The narrator expresses a high opinion of Wade's abilities in his comparison of Peroxide Jim and Wade, referring to the horse as a "complement" (paragraph 1) for Wade; however, Wade showed complete trust in the horse's ability to save the herd without his help, as evidenced by Wade dropping the reins to allow the horse to control the situation (paragraph 12).

C. Incorrect. The paragraphs refer to Peroxide Jim's ability to handle cattle; in fact, paragraph 2 says that "the horse knew the cattle business." It can be inferred that Wade had this knowledge as well, but this idea is not the focus of paragraphs 1–2 and is not the central idea of the excerpt.

D. Incorrect. Wade's ability to judge a horse's competence is not a central idea of the excerpt. The event described in the text is proof that Wade knew how to judge a horse's ability: Wade trusted Peroxide Jim, and Peroxide Jim did not let him down. The option puts the focus on Wade and one of his strengths, when the central idea and focus of the excerpt is Peroxide Jim's abilities and strengths, not Wade's.

28. The question asks how paragraph 3 conveys the effect of the setting on the cattle drive.

E. Incorrect. The riders were not trying to move the herd through the darkness. Instead, the reference to the growing darkness ("overtaken by the dusk") indicates that the riders had halted the animals for the night because moving the herd across the desert in the darkness would have been much too dangerous because of the sheer drop-off at the edge of the tableland. The riders needed the daylight to navigate the herd safely through the "pass descending to the next lower bench."

F. **CORRECT.** Paragraph 3 describes the land where the herd was as being "as level as a floor" but "rimmed by sheer rock, from which there was a drop to the bench of sage below." The drop was "a perpendicular fall of about three hundred feet"—any animal or person could fall over that edge. It was the change in height, from flat tableland to sheer drop-off, that made the terrain so dangerous.

G. Incorrect. The use of the word "desert" in the first sentence of the paragraph does not highlight the isolation of the setting or indicate that the riders and the herd were uncomfortable being alone. Instead, the word merely establishes the setting where the action occurred: "it lay as level as a floor, rimmed by sheer rock, from which there was a drop to the bench of sage below."

H. Incorrect. The excerpt does not indicate that the steep terrain made it difficult for the herd to move forward. The herd was not expected to navigate the steep terrain. Instead, the steep terrain presented a danger to the herd that must be avoided. The riders intended to move the herd safely through passes that descended gradually to lower elevations.

29. The question asks how paragraph 9 fits into the overall structure of the excerpt.

A. Incorrect. Wade was alert long before the events of paragraph 9. In paragraph 4, he began singing to the cattle because he knew that they were on the verge of stampeding. He was even more alert when he "caught a breath of fresh, moist wind with the taste of water in it" (paragraph 6) and heard thunder in paragraph 8: "The sound seemed to come out of the earth, a low, rumbling mumble."

B. Incorrect. Wade and the other riders were not calm; rather, they were alert and attempting to keep the cattle calm by singing to them. They were as prepared as they could be for what was about to happen, as shown in paragraph 1, through the selection of fresh horses and, specifically, Wade's choice to ride Peroxide Jim in the face of possible danger: "Wade had been saving this horse for emergency work."

C. Incorrect. Although Wade's leadership is implied in paragraph 9 ("He must keep them going. He touched his horse to ride on with them"), his leadership is revealed in earlier portions of the excerpt as well ("Wade had been saving this horse" [paragraph 1]; "Wade began to sing" [paragraph 5]), so this is not new information being introduced in paragraph 9 of the excerpt.

D. CORRECT. Paragraph 9 describes the lightning strike that made the cattle panic and stampede. The stampede is the main conflict Wade and Peroxide Jim addressed in the excerpt; and therefore, paragraph 9 fits into the overall structure of the excerpt by presenting the incident that caused the main conflict.

---

30. The question asks what the phrase "bore down the flank of the herd" (paragraph 13) conveys about Wade.

E. Incorrect. While Wade struggled to see the front of the herd, the words "bore down the flank of the herd" (paragraph 13) are meant to convey the intensity of the situation Wade was in, not the way the herd is blocking his vision.

F. Incorrect. The sentence from paragraph 13 states that the herd was "close on their left" and includes the phrase "bore down." Both of these phrases indicate that Wade was trapped between the stampeding herd and the steep cliff. Wade and Peroxide Jim were struggling to reach the very front of the herd to turn it away from the edge.

G. CORRECT. The phrase "bore down the flank of the herd" from paragraph 13 conveys the overwhelming strength of the herd. The herd was forcing Wade toward the cliff. The wording in the quotation emphasizes the immediate danger of the situation and conveys the idea that Wade and Peroxide Jim were almost forced over the edge of the precipice by the stampeding herd.

H. Incorrect. The phrase "bore down the flank of the herd" (paragraph 13) does not indicate anything about the fear felt by the herd. The phrase is about Wade's position between the edge of the stampeding herd and the drop-off. Wade was aware of the danger the herd was in if he and Peroxide Jim could not turn the cattle from the edge.

31. The question asks how the sentences from paragraph 11 and paragraph 16 develop a central idea in the excerpt.

A. Incorrect. While Peroxide Jim's presence was critical to saving the herd, the details in paragraph 11 and paragraph 16 do not focus on this idea. The primary idea is that the horse was so intelligent and aware that he acted on his own.

B. Incorrect. The excerpt does not tell who trained Peroxide Jim. It can be inferred that Peroxide Jim had been well trained and was knowledgeable of working cattle; however, there is no indication that Wade was the person who trained Peroxide Jim, only that Wade knew of Peroxide Jim's abilities, respected the skilled horse, and was "saving this horse for emergency work" (paragraph 1). Because the reader cannot infer from the excerpt that Wade was the trainer, this idea cannot be considered central to the excerpt.

C. **CORRECT.** Wade recognized that Peroxide Jim knew to turn the herd without any instruction from him. Throughout the excerpt, Wade exhibited confidence in his horse, Peroxide Jim. For example, the narrator says that Wade's "faith in Peroxide Jim was complete" in paragraph 2. After Wade let go of the reins (paragraph 12), the horse took over, doing exactly what needed to be done to save Wade, the herd, and himself: "a big white steer, which the horse, with marvelous instinct, seemed to pick out from a bunch, and to cling to, forcing him gradually ahead, till, cutting him free from the bunch entirely, he bore him off into the swishing sage" (paragraph 14).

D. Incorrect. The sentence from paragraph 11 and the sentence from paragraph 16 show that Peroxide Jim acted skillfully and with the knowledge that the ride was dangerous ("Wade was riding for his life. He knew it. His horse knew it" [paragraph 11]). There is no indication that Peroxide Jim was not afraid; in fact, it is likely the awareness of the danger and the fear associated with that knowledge contributed to the horse's motivation to turn the herd.

32. The question asks how the details in paragraphs 14–16 help convey a central idea of the excerpt.

E. CORRECT. Paragraphs 14–16 describe how Peroxide Jim's "marvelous instinct" headed off the herd and drove it away from the cliff. Wade acknowledged that without his instruction, Peroxide Jim knew to find the leader of the herd, cut him off from the rest of the herd, and then lead him to safety, confident that the remainder of the herd would follow. Paragraph 16 confirms this: "Whose race was it? It was Peroxide Jim's, according to Wade, for not by word or by touch of hand or knee had the horse been directed in the run." This reinforces a central idea of the excerpt regarding the horse's amazing intellect and ability.

F. Incorrect. Although paragraphs 14–16 mention the "rim," the "cliffs," and the "indescribably perilous path," these details are not the focus of the paragraphs. They are descriptions of the setting where Peroxide Jim's able and effective actions saved the stampeding herd, and it is these actions that are the central idea being conveyed.

G. Incorrect. Although Peroxide Jim is called "powerful" in paragraph 1, his physical strength is neither a central idea of the excerpt nor the focus of paragraphs 14–16. His success at turning the herd was attributed to his intellect and instinct, not his physical strength.

H. Incorrect. The excerpt does not suggest that Peroxide Jim anticipated the herd's stampede before the men did. In fact, the excerpt indicates that Wade led the men in singing to cover sudden noises that might cause the herd to stampede, indicating that Wade was alert to that possibility. Paragraph 7 also indicates that Wade anticipated the stampede, as he "checked his horse instantly" and "tightened [his] grip on the reins" as soon as he smelled the rain and heard the low rumble of thunder that preceded the lightning strike. The narrator notes Wade's actions well before the horse's actions. Paragraphs 14–16 describe how Peroxide Jim acted after the stampede began.

---

33. The question asks which sentence from the excerpt best reveals the mood on the drive before the lightning struck.

A. Incorrect. The sentence from paragraph 3 describes the setting but does not contain words that create a strong mood. In fact, this sentence shows that while there were dangerous surroundings, the riders and the herd were "now halted."

B. CORRECT. The sentence from paragraph 5 describes the riders singing "to preempt the dreaded silence, to relieve the tension" and to prevent "shock" from any sudden noise. These words provide a strong sense of the tense, heavy mood in which a terrible event such as a stampede could quickly happen.

C. Incorrect. In the sentence from paragraph 7, Wade has become aware of a change in the weather ("caught a breath of fresh, moist wind with the taste of water" [paragraph 6]) and is seeking to verify it. Even though a rainstorm was one concern the riders had, the words describing Wade's immediate reaction to his discovery do not best convey the mood of dread and foreboding that the men and horses feel just before the lightning strike.

D. Incorrect. While the words "ghostly" and "still moving in a circle" in the sentence from paragraph 9 create a strange and mysterious image, the mood before the lightning struck was not one of mystery or suspense. Instead, these descriptive words are used to indicate Wade's faint ability to see the herd moving in the dark.

A Miracle Mile

34. The question asks how the words "feat," "humanly impossible," and "impenetrable barrier" in paragraph 1 affect the tone of the paragraph.

E. Incorrect. Although paragraph 1 states that "several elite runners aimed to break that supposedly impenetrable barrier," the words "feat," "humanly impossible," and "impenetrable barrier" suggest that the goal was unattainable even for the most skilled runners.

F. **CORRECT.** No one had ever been able to run a mile in less than four minutes, and the words "feat," "humanly impossible," and "impenetrable barrier" imply that the goal seemed unattainable. These words also reinforce the comparison of running a four-minute mile to "scaling Mount Everest" (paragraph 1).

G. Incorrect. The words "feat," "humanly impossible," and "impenetrable barrier" describe how challenging and almost impossible running a four-minute mile seemed, and while other elite runners "aimed to break that supposedly impenetrable barrier" (paragraph 1), the paragraph focuses on Roger Bannister, not the competition among elite runners seeking to break the record.

H. Incorrect. Bannister's training program is described in paragraphs 3 and 4, and the words "feat," "humanly impossible," and "impenetrable barrier" are used in paragraph 1 to describe the magnitude of Bannister's goal to run a four-minute mile. Though his training program was intense, these words relate to the intensity of the goal itself, not to the intensity of his training.

---

35. The question asks which sentence best supports the idea that Bannister needed an alternative to "logical planning" (paragraph 3) in order to accomplish his goal.

A. Incorrect. The outcome of the 1952 Olympics, referenced in the sentence from paragraph 2, is what prompted Bannister to seek a new goal: "Determined to redeem himself, Bannister . . . focused on the ultimate prize—breaking the four-minute-mile barrier" (paragraph 2).

B. Incorrect. The sentence from paragraph 3 does not show an alternative to Bannister's training plan to "develop endurance and speed" (paragraph 3) and his focus on using logical planning in order to accomplish his goal.

C. Incorrect. The sentence from paragraph 4 focuses on details of his training plan, explaining the "intensive interval training" (paragraph 3) that Bannister used to build his endurance and speed, not an alternative form of preparation.

D. **CORRECT.** The sentence from paragraph 4 explains that Bannister reached a point where he could not improve his time despite the strict training plan he had created. Taking a break from his training to spend time mountain climbing "permitted his muscles to recuperate and left him feeling refreshed" (paragraph 4).

36. The question asks how the sentences from paragraph 7 contribute to the development of ideas in the passage.

E. CORRECT. The sentences from paragraph 7 show that toward the end of the race, Bannister knew that the goal of breaking the four-minute-mile barrier was within his grasp and that he had the focus necessary to achieve it. The sentence following Bannister's quotation states that he did indeed meet his goal, crossing "the finish line in 3 minutes 59.4 seconds" (paragraph 7).

F. Incorrect. The feelings Bannister expressed in the sentences from paragraph 7 did not erase those feelings related to his loss at the 1952 Olympics, which were what drove him to the achievement he was about to make.

G. Incorrect. While the quotation states that Bannister felt "unity," this pertains to his running, not to his work with the team. The sentences from paragraph 7 capture Bannister's focus on his chance to break the barrier and what he was feeling at that moment.

H. Incorrect. The sentences from paragraph 7 express Bannister's realization that he was on the verge of reaching a goal. The sentences show that in the seconds before crossing the finish line, Bannister was fully focused on the end goal and was not thinking about his training or his running technique.

---

37. The question asks what idea is conveyed by the phrase "a new mindset had taken root" in paragraph 8.

A. CORRECT. After Bannister ran the mile in under four minutes, it became clear to other runners that this goal was within the realm of human ability, and "soon after Bannister's achievement, four other athletes matched his performance" (paragraph 8).

B. Incorrect. While the passage states that runners broke the four-minute-mile barrier after Bannister initially broke it ("Soon after Bannister's achievement, four other athletes matched his performance" [paragraph 8]), running a four-minute mile is still impressive and a challenge for elite runners.

C. Incorrect. Although runners most likely knew that the training needed in order to break the four-minute-mile barrier was difficult and intensive, the phrase "a new mindset had taken root" focuses on their belief in the possibility of breaking the four-minute-mile barrier, which had been viewed as a "supposedly impenetrable barrier" (paragraph 1), not the idea that the training was difficult.

D. Incorrect. Even though "four other athletes matched his performance" and "the record continued to fall" (paragraph 8), the phrase "a new mindset had taken root" does not refer to the idea that there was an increase in the number of runners entering races just to try breaking the four-minute-mile barrier.

38. The question asks which sentence indicates that Bannister nearly made a mistake that would have cost him the world record.

E. Incorrect. The sentence from paragraph 4 describes a challenge Bannister faced during his training period, when he used "intensive interval training to develop endurance and speed" (paragraph 3). Bannister ran laps on a "quarter-mile track" (paragraph 3) and was able to control his pace at this time—unlike during the actual race to break the record.

F. Incorrect. The sentence from paragraph 6 describes the start of the race and Brasher's role as "first rabbit" for Bannister. Bannister was behind Brasher, following their plan for breaking the record.

G. CORRECT. If Bannister had begun running faster than the "steady but grueling pace" (paragraph 7) set by his "rabbit," he would likely not have had enough energy to finish the race. As paragraph 6 notes, "the runner conserves about 15 percent of his or her effort" by allowing the rabbit to set the pace. Bannister had "lost his instinctive feel for his pace" (paragraph 7) in the excitement of the race. If he had given in to his impulse to run faster and bypassed the rabbit at that point in the race, it would have cost him energy, and, in turn, the record.

H. Incorrect. The sentence from paragraph 7 describes how Bannister leaped ahead of Chataway, his second "rabbit," at the appropriate time in the effort to break the record. Chataway had "surged forward, leading Bannister at this same punishing rate for another lap and a half" (paragraph 7) before Bannister moved past him.

---

39. The question asks how Bannister's loss in the 1952 Olympics influenced his decision to pursue breaking the four-minute-mile barrier.

A. Incorrect. While Bannister recognized the weaknesses that led to his poor performance in the Olympics and worked "to develop endurance and speed" (paragraph 3), the loss made him "determined to redeem himself" (paragraph 2). The desire for redemption influenced Bannister to focus specifically on running a mile in under four minutes, rather than on winning other races or training for other distances.

B. Incorrect. Although Bannister developed an "intensive interval training" plan to improve his "endurance and speed" (paragraph 3), he applied a different approach only after his progress toward a four-minute mile reached a "plateau" (paragraph 4) in 1954. It was his desire to "shave off at least one more second in order to reach his target" (paragraph 4) that prompted him to take a break from interval training and go mountain climbing for three days.

C. CORRECT. Bannister sought to redeem himself after "he finished in a dismal fourth place" at the Olympics (paragraph 2). He thought that his performance "was a disappointment for him and his country, Great Britain," and he responded by setting a goal to successfully conquer the four-minute mile, which was considered the "ultimate prize" (paragraph 2).

D. Incorrect. Bannister's loss at the 1952 Olympics motivated him to change his training focus to reaching the "ultimate prize" (paragraph 2) of breaking the four-minute-mile barrier, which no other runner had accomplished. His loss at the Olympics did not present him with a specific opportunity to reach this goal.

40. The question asks how interval training affected Bannister's performance.

E. Incorrect. The moderation of his pace was achieved through the use of "rabbits," described in paragraph 6, more than through his method of interval training.

F. Incorrect. Bannister worked individually during the interval training period and then paced himself with a two-person team of "rabbits," which were introduced in paragraph 5 and explained in paragraph 6. It was the use of "rabbits" during the race that helped him conserve some of his effort, not the interval training.

G. **CORRECT.** As paragraph 3 states, the goal of Bannister's training program was to "develop endurance and speed," which are synonyms of the words "stamina" and "pace."

H. Incorrect. Although Bannister "let his body recover for two minutes" (paragraph 3) during interval training, this was not the primary effect of the training on Bannister's performance. Instead, interval training allowed him to develop greater endurance and speed.

---

41. The question asks how the author's use of chronological structure contributes to the development of ideas in the passage.

A. Incorrect. While paragraph 4 mentions the "plateau" Bannister dealt with and the break that "permitted his muscles to recuperate," the chronological structure of the passage focuses mainly on the progression of Bannister's process over time.

B. Incorrect. Even though the passage suggests that Bannister's ability to break the four-minute-mile barrier improved and that he felt "prepared to attempt to break the world record" (paragraph 4), the chronological structure of the passage primarily serves to show how Bannister's progress over time led to his success.

C. Incorrect. The chronological structure of the passage begins with an acknowledgment that Bannister was inspired to break the four-minute-mile barrier by his loss at the 1952 Olympics (paragraph 2); however, the overall organization of the passage highlights his dedicated efforts over time to break the four-minute-mile barrier.

D. **CORRECT.** The chronological structure of the passage follows the progression of Bannister's training from his loss at the 1952 Olympics to the race where he ran the first sub-four-minute mile on May 6, 1954 (paragraph 5).

Serpent Mound

42. The question asks how the poem's form contributes to the poem's meaning.

E. **CORRECT.** The poem is structured as one long stanza. The line lengths throughout the poem and the line indents (such as those in lines 7–10) create a visual effect so that the poem itself mimics the shape of the Serpent Mound.

F. Incorrect. The uneven line lengths in the poem do not indicate the different interpretations of the mound; separate stanzas or other stopping points would more effectively point to contrasting ideas.

G. Incorrect. The dashes in the poem lead to further explanation of a thought, not a change of thought.

H. Incorrect. The lack of regular rhyme and meter is intended to create a conversational tone rather than show the speaker's struggle to grasp how large the mound is.

---

43. The question asks which lines reveal how the setting affects the speaker and the men from the museum.

A. Incorrect. The words "being winter" (line 8) work to establish the setting, but lines 8 and 9 do not describe the effect the winter setting has on the speaker and the men.

B. **CORRECT.** The imagery in lines 14 and 15 describes how the winter silence makes the speaker and the men feel emotional heaviness: it "pressed / down on all of us like a weight."

C. Incorrect. Although the words "the humps in the ground were all but / invisible" describe how the setting appears to the speaker and the men, lines 16 and 17 do not describe how the setting affects them.

D. Incorrect. Although lines 21 and 22 do describe the setting, the lines do not describe how the setting affects the speaker and the men. The lines describe the setting in the summer, which is before the men from the museum show up.

44. The question asks how lines 1–2 contribute to the development of ideas in the poem.

E. Incorrect. The idea that the men are too busy with their work to talk to the speaker is not conveyed in the poem, and, in fact, one of the museum men discusses the oval mound with the speaker ("as if swallowing the sun, one of the museum / men suggested" [lines 32–33]).

F. **CORRECT.** The lines, with their mention of measuring tapes and sketchbooks, indicate that the reasons the museum men came were to measure the mound and to draw sketches of it.

G. Incorrect. There is little indication in the poem that the museum men have a hidden motive for studying the mound. Lines 1–2 present a straightforward description of the men and their equipment, which emphasizes the men's academic interest in studying the mound.

H. Incorrect. While the speaker displays some curiosity about the work the museum men are doing ("one of the museum / men suggested, taking notes with his quill pen, / an old-style inkhorn slung at his side. / I liked that" [lines 32–35]), lines 1–2 focus on introducing the idea that the mound is a formation that is worth formal study and examination by experts.

---

45. The question asks how line 28 contributes to the development of ideas in the poem.

A. Incorrect. Although the museum men are documenting the shape of the mound in line 33, lines 29–32 and 35–41 focus on what the oval mound represents as interpreted by the museum men, the speaker, and the speaker's sister.

B. Incorrect. While the lines preceding line 28 describe the body of the snake in detail ("you could climb / a tree and get some idea of the whole thing: / the serpent's body undulating, slithering / silently across the ancient / earth" [lines 24–28]), the purpose of line 28 is to begin the development of the ideas about the oval shape at the end of the mound: the serpent's mouth.

C. **CORRECT.** Line 28 introduces the presence of the oval mound at the mouth of the snake. The meaning of this oval is of great interest to the museum men and the speaker. Line 28 leads to the idea that there is speculation about the oval mound ("as if the snake were about to swallow an egg" [line 29], "as if swallowing the sun" [line 32], and "It is singing to the sun" [line 38]).

D. Incorrect. The speaker does not say that the oval shape near the end of the mound is difficult to see. Earlier, the speaker says that the ridges of earth are difficult to see unless you are near them, but the speaker does not say this about the oval shape.

46. The question asks what impact the phrases "all but / invisible" and "even less obvious" in lines 16–18 have on the meaning of the poem.

E. CORRECT. The words "all but / invisible" indicate that a person must be close to see the humps in the ground, while the phrase "even less obvious" indicates that a person must be far away to see the overall snake shape of the mound.

F. Incorrect. While the speaker has to lead the museum men to the mound because they did not know the exact location, the words in lines 16–18 are related to the difficulty in viewing the mound from the immediate surrounding area.

G. Incorrect. The speaker is willing to take the museum men out to study the mound, so there is no indication in the poem that the speaker wants the location of the mound to remain a secret. The words in lines 16–18 convey the idea that the mound is difficult to see.

H. Incorrect. While the speaker contemplates the significance of certain elements of the mound, the phrases in lines 16–18 relate to a viewer's ability to see the physical shape of the mound, not its deeper meaning.

---

47. The question asks what impact the words "*swish*," "chitter," and "cry" in lines 12–13 have in the poem.

A. CORRECT. The words highlight the sounds of the animals that visit the mound in the summer: the "*swish* of a beaver's heavy tail" (line 12), the "chitter of a chickadee" (line 13), and the "cry of a hawk" (line 13). These words help contrast the quiet stillness of the setting around the mound in the winter.

B. Incorrect. While the words in lines 12–13 convey the sounds certain animals make in the summer, the sounds of the animals that live near the mound are a natural part of life in the area, not a disruption.

C. Incorrect. The speaker is contrasting the sounds of the animals around the mound during the rest of the year with the silence of the winter months, not merely indicating the variety of wildlife.

D. Incorrect. The speaker expresses the idea that the mound is more visible in the winter because of the lack of brush ("It being winter, / there was little underbrush to speak of" [lines 8–9]). Then lines 12–13 describe sounds, not the appearance of the mound in winter.

48. The question asks how the interaction between the speaker and Ruth in lines 37–41 conveys a central idea of the poem.

E. Incorrect. While there are many different interpretations of the mound's meaning, there is no way to determine which of the interpretations is most accurate, and there is no way to know the mound's true purpose.

F. **CORRECT.** The interaction references Ruth's interpretation of the open-mouth shape as a serpent singing to the sun. This interpretation creates a joyful mood. The speaker contrasts this perspective with the idea that the mound is swallowing the sun, which creates a more aggressive feeling. These various interpretations of a physical shape arise out of what the individuals feel when they look at the mound.

G. Incorrect. The speaker does not describe any benefit to considering what different people imagine when they see the mound. Instead, the speaker is simply describing different interpretations.

H. Incorrect. Ruth's interpretation of the mound's shape is fanciful and symbolic. It is unlikely that scientific study would change the minds of people such as Ruth about the meaning of the mound.

---

49. The question asks how the poet uses dialogue to contrast the points of view of the speaker and Ruth regarding the mound.

A. Incorrect. The interpretation Ruth offers of the mound as a snake singing is abstract, but Ruth does not seem concerned that it is an overly metaphorical or figurative interpretation. The dialogue serves to highlight that Ruth is firm in her belief.

B. Incorrect. There is no indication that the museum men are considering Ruth's interpretation of the mound or that Ruth wants them to share her interpretation. Ruth's interpretation is meant to convey an abstract idea, while the museum men would be looking for a firm academic explanation of the mound. Ruth is persistent in her belief, and the dialogue does not suggest that she is concerned with the museum men's interpretation or findings.

C. Incorrect. Ruth merely states her interpretation and says that she thinks she hears the Serpent Mound singing sometimes. She does not seek to make the speaker agree with her.

D. **CORRECT.** Beginning in line 37, after the speaker suggests the mound is swallowing the sun, Ruth disagrees. The poet uses the word "insisted" in line 39 to show that Ruth firmly believes in her own interpretation of the mound.

A Memory Revolution

50. The question asks how the details in paragraph 3 about cognitive offloading convey a central idea of the passage.

E. Incorrect. Although paragraph 3 describes the Internet as "a vast extended memory," it does not discuss reliance on the Internet for information. The paragraph states that the Internet "allows people to digitally access and retrieve much larger volumes of information" and indicates that this benefit leaves people free to focus on "connecting data, learning new information, or solving problems." However, these details about the benefits of the Internet do not express an opinion about the inevitability of Internet reliance.

F. **CORRECT.** A central idea of the passage is that the Internet is changing how people retain information. Paragraph 3 supports this idea by stating that "a similar process has been taking place for centuries" and that "in the past," resources such as encyclopedias were used to store and find information. The details provided in paragraph 3 about encyclopedias and the Internet show that people have always used resources to remember information and that these resources change over time as people develop new ways to "assist their memories."

G. Incorrect. While paragraph 3 does compare the use of encyclopedias to obtain information in the past with the use of today's Internet, this comparison fails to convey the central idea of the passage that the Internet is changing how people remember information.

H. Incorrect. Although paragraph 3 states that "much larger volumes of information" are available on the Internet than what has been available in previous methods of information storage, such as encyclopedias, this fact does not relate to an increase in the ability to understand that information and is not a central idea of the passage.

51. The question asks how the details of the experiment described in paragraph 5 convey a central idea of the passage.

A. Incorrect. Although paragraph 5 states that participants read the trivia facts and then "typed the statements into a computer file," it does not explain the impact of repetition on memory, nor does this convey a central idea of the passage.

B. Incorrect. Paragraph 5 acknowledges that people evaluate which information is important enough to remember, but it does not describe the rate at which people forget unimportant information. According to the paragraph, information is considered less important to remember if a person believes that he or she will be able to retrieve that information easily in the future. This does not mean the information is unimportant but rather that it is readily available for future access.

C. Incorrect. Paragraph 5 specifies the number of trivia facts that study participants were given to read (forty), but it does not describe the amount of information as a factor in the participants' memory performance. According to the paragraph, it was not the amount of information but rather the expectation of future availability that affected how much information participants were able to recall.

D. **CORRECT.** A central idea of the passage is that the way the human memory stores information is changing because of the Internet. The details of the experiment support this idea by indicating that study participants remembered different amounts of information based on whether they "thought the information would be saved" (paragraph 5). Those who "believed the information would be erased and no longer available" (paragraph 5) remembered 40 percent more than those who expected to be able to access the information again in a saved computer file. Therefore, paragraph 5 conveys the central idea that the expectation of future access to information is a key element in "how people evaluate which information deserves their effort to remember."

52. The question asks how the sentence from paragraph 7 contributes to the structure and development of ideas in the passage.

E. Incorrect. Although the studies showed, in part, that reliance on the Internet is increasing ("participants recalled the information's location more often than the content itself" [paragraph 6]), the studies were not conducted in order to determine the risks of Internet use. The claim in the sentence did not prompt the research described in paragraphs 2 and 6.

F. Incorrect. While the sentence in paragraph 7 poses a question about the disadvantages of relying on the Internet, paragraphs 2 and 6 present the study data on Internet use and memory in a neutral tone ("correctly identifying 49 percent of the folders for specific facts while remembering only 23 percent of the actual trivia" [paragraph 6]). Neither study describes the availability of information on the Internet as an advantage or a disadvantage.

G. CORRECT. Paragraphs 2 and 6 describe the results of experiments related to the Internet's effect on memory without commenting on the advantages or disadvantages of relying on that technology, and the sentence in paragraph 7 presents a questioning viewpoint that moves away from the neutral perspective of the broader passage. The opinion in the sentence is directly argued against in the three sentences that follow it, which present an extended quote from Steven Pinker, a psychology professor at Harvard University. Pinker refutes the idea expressed by the sentence, stating that "knowledge is increasing exponentially; human brainpower and waking hours are not." He adds that technologies such as the Internet "are the only things that will keep us smart."

H. Incorrect. Although the sentence in paragraph 7 expresses caution about the possible effects of the Internet on memory, the passage does not shift from an optimistic tone to a cautious tone. Actually, paragraph 6 provides the data on Internet use and memory in a neutral tone. The argument expressed by the sentence is also not elaborated on in the sentences that follow, but is immediately argued against by Steven Pinker, a professor of psychology. The last sentence of paragraph 7 in fact refutes the culled sentence: " 'Far from making us stupid, these technologies are the only things that will keep us smart.' "

53. The question asks how the study described in paragraph 6 influenced researchers' ideas about memory in the digital age.

A. Incorrect. The study required participants to organize information into folders, but the results suggest that organizing the information did not make the information easier to remember; instead, participants remembered the folder in which to find the information but forgot the information itself.

B. Incorrect. Although the participants in the study were given a keyword, such as "ostrich," when asked to remember "which folder contained a particular fact," the study was significant for researchers because it demonstrated that "our memory is adapting to the Internet age by prioritizing where to locate information even when the specific details are forgotten" (paragraph 6). The study confirmed that participants were remembering where the information was stored, because they were able to provide the name of the folder (keyword) where the information was stored.

C. **CORRECT.** The study in paragraph 6 demonstrated that participants were better able to recall where to find certain information than to recall the information itself. This influenced researchers' ideas about memory in the digital age: "Overall, participants recalled the information's location more often than the content itself, correctly identifying 49 percent of the folders for specific facts while remembering only 23 percent of the actual trivia" (paragraph 6).

D. Incorrect. The study did not examine the relative importance of remembering basic information or storing detailed information. It examined the effect of the Internet on the information that people remember and concluded that human memory "is adapting to the Internet age by prioritizing where to locate information" (paragraph 6).

---

54. The question asks how the diagram provides additional support for the topic presented in the passage.

E. Incorrect. While the diagram indicates that the human brain has the ability to maintain different types of memory, the diagram does not show the need for the brain to adapt to obtaining information from the Internet rather than from other sources.

F. Incorrect. The diagram enhances the reader's understanding of how long-term memories are formed, but it does not provide details about how the Internet can be used to improve long-term recollection of information.

G. Incorrect. The diagram provides an understanding of how details that are important to people can become stored because of an effort made to recall them. However, the diagram does not show how people decide which information is important and which is not.

H. **CORRECT.** The diagram depicts the connections that the human brain maintains between the different forms of memory. It also illustrates the idea that repetition and rehearsal are important steps in creating memories, as unrehearsed information will be forgotten. This supports the passage by highlighting the idea that access to search engines and other tools leads people to skip rehearsal and repetition steps that create memories, because people know that the information is readily accessible.

55. The question asks for the evidence from the passage that is most relevant to the claim in paragraph 7 that " 'far from making us stupid, these technologies are the only things that will keep us smart.' "

A. Incorrect. Whether the participants decided to use the Internet to answer easy trivia questions varied based on the options that the participants were given during the first part of the experiment and, therefore, cannot be relevant to the claim in paragraph 7. Even when given the option of using the Internet, some participants chose to recall information from memory instead.

B. **CORRECT.** The assertion made in paragraph 3 that states that cognitive offloading allows for "people's minds [to be] free for other cognitive feats, such as connecting data, learning new information, or solving problems" is relevant to the claim in paragraph 7 because it indicates that the ability to store large amounts of information within the brain does not necessarily make someone smart. It also suggests that if people did not have to use so much effort simply organizing and storing information, their brain would be free to conduct higher-order tasks: "the Internet, serving as a vast extended memory, allows people to digitally access and retrieve much larger volumes of information. Consequently, people's minds are free for other cognitive feats, such as connecting data, learning new information, or solving problems" (paragraph 3).

C. Incorrect. The discussion in the passage connecting how people organize information in their mind and their ability to recall that information focuses on the process of organizing information within human memory rather than on how technology helps keep people's minds available for complex thoughts.

D. Incorrect. Although the passage provides an accurate description of transactive memory, it provides no indication of how using such memory would advance a person's ability to maintain or improve intelligent thought.

56. The question asks which sentence from the passage suggests that using Internet search engines may lead people to rely less on their own ability to recall information.

E. Incorrect. While the sentence in paragraph 1 refers to the increase in use that has made the Internet "an integral component" of everyday life for many people, it does not address memory or explain the effect of Internet use on a person's ability to recall information.

F. Incorrect. Although the sentence in paragraph 2 refers to research that was conducted to determine how the use of the Internet affects a person's memory, the sentence simply explains one guideline of the study. The fact that the study required one group of participants to use Google does not indicate whether using a search engine affects the degree to which people rely on their own ability to recall information.

G. CORRECT. The sentence in paragraph 2 reveals the results of a study that allowed half the participants to use Google to obtain answers to trivia questions and initially required the other half to use only their memory to answer questions. The sentence states that "83 percent of the Internet group continued to consult Google in the second round" and that "only 63 percent of the memory group chose to do so." These statistics demonstrate that using Google in the first round resulted in participants in the Internet group relying more heavily on the Internet search engine to recall information in the second round, whereas participants who had not used Google in the first round were more likely to rely on their own ability to recall information.

H. Incorrect. The sentence in paragraph 5 describes a task presented to participants in a research study. Although the study was designed to examine "how people evaluate which information deserves their effort to remember" (paragraph 5), the sentence does not indicate that use of Internet search engines prompted people to rely less on their own ability to recall information.

57. The question asks how the studies presented in the passage are used to illustrate the effect of the Internet on a person's memory.

A. CORRECT. The study described in paragraph 5 examined the effect of computer use on the way people evaluate information, specifically "which information deserves their effort to remember," and determined that "those who believed the information would be erased and no longer available could recall 40 percent more facts than those who thought the information would be saved." The study described in paragraph 2 established that the use of Internet search engines increases the "inclination to rely on the Internet in order to retrieve information" (paragraph 3), and the study in paragraph 6 examined how this reliance on technology affects the way people store information: "Overall, participants recalled the information's location more often than the content itself."

B. Incorrect. Although a difference in the ability of the human brain and the capacity of the Internet to locate information might seem evident, the studies cited in the passage did not examine the ability or the capacity of either. The studies did not measure what the human brain is capable of but rather how memory is affected by the use of the Internet.

C. Incorrect. While the studies explored the Internet's effect on the way information is stored in human memory, the type of information was not described or compared. Instead, the studies indicated that location is the main difference between the information stored in the Internet and the information stored in human memory, noting that the Internet has become "an external source of the recollections and associative networks that constitute memory" (paragraph 6).

D. Incorrect. Although it is increasingly common to use the Internet to obtain information (paragraph 2) rather than try to memorize information (paragraph 5), the studies did not examine the difficulty or ease of obtaining/recalling information using either method.

58. **(120)** There are 5 choices for the first digit, 4 choices for the second digit, 3 choices for the third digit, 2 choices for the fourth digit, and 1 choice for the final digit. The total number of possibilities is $5 \times 4 \times 3 \times 2 \times 1 = 120$.

59. **(3)** $\frac{147 - x}{12} = 12$

$147 - x = 144$

$x = 3$

60. **(-3.4)** $\left|(-6) - (-5) + 4.2\right| - \left|3 - 9.6\right| =$

$\left|3.2\right| - \left|-6.6\right| = 3.2 - 6.6 = -3.4$

61. **(300)** Let x be the total number of pages in the workbook. Then, 20% of x is 60. Set up a proportion and solve for x :

$\frac{20}{100} = \frac{60}{x}$

$20x = 6{,}000$

$x = \frac{6{,}000}{20} = 300$ pages

62. **(65)** Call the missing angle in the top half of the figure x . The sum of the four angles on the top of the figure is equal to 180°.

$x + y + 30 + 60 = 180$

Since x is a vertical angle with the 25° angle, then x is also 25°. Use that to solve for y .

$25 + y + 30 + 60 = 180$

$y + 115 = 180$

$y = 65$

63. **(D)** $x(x - 2y) = 9\left[9 - 2(-7)\right] =$

$9(9 + 14) = 9(23) = 207$

64. **(E)** Find the missing angle, angle QPT, of triangle PQT: $180° - 70° - 50° = 60°$

In parallelogram PQRS, angle QPT is congruent to angle QRS, so the measure of angle QRS is also 60°.

65. **(D)** Break the equations apart to each equal M:

$M = 3N$

$M = \frac{P}{4}$

$M = Q + 5$

$M = \frac{R}{7}$

Pick a number to substitute into the equations, and solve the equations to find the values of M, N, P, Q, *and* R.
Let $M = 2$. Since all the equations are equal to 2, substitute 2 to find each variable.

$M = 3N$
$2 = 3N$
$\frac{2}{3} = N$
$M = \frac{P}{4}$
$2 = \frac{P}{4}$
$8 = P$
$M = Q + 5$
$2 = Q + 5$
$-3 = Q$
$M = \frac{R}{7}$
$2 = \frac{R}{7}$
$14 = R$

Variable R has the greatest value.

66. **(F)** The total number of desserts ordered is $42 + 23 + 47 + 48 = 160$.
The probability that ice cream was chosen is $\frac{48}{160} = \frac{3}{10} = 30\%$.

67. **(C)** Set up an inequality to compare the costs:

$0.15x \leq 10.50$
$x \leq 70$

Therefore, 70 individual sheets of paper would cost \$10.50, so 69 is the greatest number of individual sheets of paper that Macie can buy that would be less expensive than the package.

68. **(F)** 7:00 p.m. is 6 hours after 1:00 p.m. Calculate the number of degrees the temperature dropped in 6 hours: $3 \times 6 = 18$ degrees. Subtract that from the starting point (8 degrees) to find the solution: $8 - 18 = -10$ degrees.

69. **(D)** The ratio of red to blue to green is 15:7:3. Find the proportion of blue marbles. Add the numbers of the ratio and use the total sum as the denominator: $\frac{7}{15+7+3} = \frac{7}{25}$. Find the proportion of green marbles: $\frac{3}{25}$.

Since there are a total of 75 marbles, the number of blue marbles is $\frac{7}{25} \times 75 = 21$. The number of green marbles is $\frac{3}{25} \times 75 = 9$.

The number of red marbles is $75 - 21 - 9 = 45$. If 2 blue marbles are removed and replaced with 2 green marbles, the number of blue marbles is now 19 and the number of green marbles is now 11. The ratio of red marbles to green marbles is 45:11.

---

70. **(G)** Set up a proportion:

$\frac{x}{416} = \frac{3}{96}$

$96x = 1{,}248$

$x = 13$ bundles

71. **(C)** Since 18 and 24 are both multiples of 6, find the least common multiple of only 18 and 24.

Multiples of 18: 18, 36, 54, 72…

Multiples of 24: 24, 48, 72…

The least common multiple of 6, 18, and 24 is 72.

---

72. **(F)** Let x be the number of dozens of eggs for 300 customers. Set up a proportion:

$\frac{x}{300} = \frac{15}{200}$

$200x = 4500$

$x = 22.5$ dozen eggs.

Round up to 23 because you can't purchase half an egg.

---

73. **(C)** The total number of bottles of juice in the cooler is $5 + 3 + 6 = 14$.

The number of bottles of juice that are not apple juice (grape juice and orange juice) is $3 + 6 = 9$.

So the probability is $\frac{9}{14}$.

74. **(H)** The radius of the large plate is 20 cm. Use 20 cm to find the area of the large plate:

$A = \pi r^2 = \pi\left(20^2\right) = 400\pi$ sq cm

The circumference of the smaller plate is 20π cm. Use that to find the radius, and then the area, of the smaller plate:

$C = 2\pi$

$20\pi = 2\pi r$

$r = 10$

$A = \pi r = \left(10^2\right) = 100\pi$ sq cm

Subtract the area of the small plate from the area of the large plate:

$400\pi - 100\pi = 300\pi$ sq cm

75. **(D)** The question says that an equal number (x) of each type of page space was purchased. To find the number of each type of page space that was purchased, multiply the price per type by x and set it equal to the total amount spent, then solve for x :

$200x + 350x + 600x = 11{,}500$

$1{,}500x = 11{,}500$

$x = 10$

The store purchased 10 units of each type of page space. To find the total amount of page space purchased, multiply each type of page space by 10, and add:

$\left(10 \times \frac{1}{4} \text{ page}\right) + \left(10 \times \frac{1}{2} \text{ page}\right) +$
$\left(10 \times 1 \text{ page}\right) = 17\frac{1}{2} \text{ pages}$

76. **(F)** Solve the inequality for x .

$3x + 8 \leq 92$

$3x \leq 84$

$x \leq 28$

The **positive** odd numbers less than 28 are 1, 3, 5, ..., 25, and 27. There are 14 of them.

77. **(A)** Substitute 3 for y and solve for x:

$$\frac{36}{y} = 4x$$

$$\frac{36}{3} = 4x$$

$$12 = 4x$$

$$3 = x$$

---

78. **(H)** Since $\overline{XY} = 20$ cm, use that to find $\overline{YZ}$:

$$\overline{YZ} = \frac{3}{5}\overline{XY} = \frac{3}{5}(20) = 12 \text{ cm}$$

$$\overline{XZ} = \overline{XY} + \overline{YZ} = 20 + 12 = 32 \text{ cm}$$

---

79. **(C)** Calculate the cost of the cloth before tax:

$$1\frac{3}{4} \times 8 = \frac{7}{4} \times 8 = \$14$$

Find the tax for \$14 worth of cloth:

$$14 \times 8\% = 14 \times \frac{8}{100} = \$1.12$$

Add the cost of the fabric and the tax:

$$\$14 + \$1.12 = \$15.12$$

80. **(F)** To find M, subtract $N - M$ and set it equal to the length:

$$1\frac{1}{3} - M = 5\frac{5}{6}$$

$$-M = 5\frac{5}{6} - 1\frac{1}{3}$$

$$-M = 5\frac{5}{6} - 1\frac{2}{6}$$

$$-M = 4\frac{3}{6}$$

$$M = -4\frac{1}{2}$$

---

81. **(B)** Add the four values in the ratio $(177 + 12 + 7 + 4 = 200)$ and use the sum as the denominator. Use that to find the fraction of zinc in one of the coins. Then reduce the fraction:

$$\frac{12}{200} = \frac{3}{50}$$

Multiply this fraction by 8 to find the number of grams of zinc in decimal form:

$$\frac{3}{50} \times 8 = \frac{24}{50} = 0.48 \text{ g}$$

82. **(G)** Jack scored a mean of 15 points per game in each of the first 3 games, so he earned a total of 45 points for the first 3 games. Use that information to calculate the mean over the four games:

$\frac{45+27}{4} = \frac{72}{4} = 18$

---

83. **(B)** Find the number of liters that need to be added. Since $\frac{1}{3}$ of the oil drum is full, $\frac{2}{3}$ of the drum remains empty:

$\frac{2}{3} \times 4{,}320 = 2{,}880$ liters.

Use the conversion $1\text{ kL} = 1{,}000\text{ L}$ to find the number of kL: $\frac{2{,}880}{1{,}000} = 2.88\text{ kL}$

---

84. **(F)** To find out how old Nicole was 5 years ago, find out how old Nicole and Carmen are now.

Let N = Nicole's age now.

Let C = Carmen's age now.

$C + 2 = 17$

$N = 3C$

$N = 3(15) = 45$ (Nicole's age now)

$N - 5 = 45 - 5 = 40$ (Nicole's age 5 years ago)

85. **(C)** Let x be the original amount of the chemical. It loses 20% after each week, which means 80% of the chemical remains at the end of each week. End of first week: $0.80x$

At the end of the second week, 80% of the amount left at the end of the first week remains.

End of second week:
$0.80(0.80x) = 0.64x$ or 64%

---

86. **(G)** One more than an odd integer must be even.

One more than $w - 1$ is w, therefore w must be even. Two times an even integer must be even, therefore $2w$ is even. An even integer decreased by 2 must be even.

Therefore, $2w - 2$ must be even.

---

87. **(B)** Find the least common multiple of 2, 3, and 4 — which is 12. So, it takes 12 minutes before all three are back at the starting line. Ann completes 1 lap every 2 minutes, so in 12 minutes she has completed 6 laps.

---

88. **(F)** $4(7 - 3x) - (5 - x) =$
$28 - 12x - 5 + x =$
$23 - 11x$

89. **(D)** Add the number of students for each category to find out how many total students were in the survey:

$12 + 16 + 7 + 5 = 40$

The number of students who had at least 2 pets are the ones who have 2 pets (7) plus the ones who have 3 or more (5). The total number of students with at least 2 pets is: $7 + 5 = 12$

The probability of a student in the survey having at least two pets is: $\frac{12}{40} = \frac{3}{10}$

90. **(E)** Let x be the total number of liters the container can hold.

$\frac{n+10}{x} = 60\%$ and $\frac{n+16}{x} = 75\%$

Solve each equation for x:

Equation 1:

$$\frac{n+10}{x} = \frac{60}{100}$$
$$\frac{n+10}{x} = \frac{3}{5}$$
$$3x = 5(n+10)$$
$$x = \frac{5n+50}{3}$$

Equation 2:

$$\frac{n+16}{x} = \frac{75}{100}$$
$$\frac{n+16}{x} = \frac{3}{4}$$
$$3x = 4(n+16)$$
$$x = \frac{4n+64}{3}$$

Now, set the two equations equal to each other and solve for n.

$$\frac{5n+50}{3} = \frac{4n+64}{3}$$
$$5n + 50 = 4n + 64$$
$$n + 50 = 64$$
$$n = 14 \text{ liters}$$

91. **(B)** $5x^3 + 3x + 9 + \frac{1}{x^2}$

$= 5\left(10^3\right) + 3(10) + 9 + \frac{1}{10^2}$

$= 5{,}000 + 30 + 9 + \frac{1}{100} = 5{,}039.01$

---

92. **(E)** The length of one side of the square is 6 cm. Since R, S, and T are midpoints, then $\overline{TM}$, $\overline{MR}$, $\overline{RN}$, and $\overline{NS}$ are all equal to 3 cm. Triangles TMR and RNS are both right triangles, so the area of one of the triangles is $\frac{1}{2} \times 3 \times 3 = \frac{9}{2}$. The triangles are congruent, so the sum of the areas is $\frac{9}{2} + \frac{9}{2} = 9$ sq cm.

---

93. **(D)** Let x be the amount spent on planned expense in one year:

$\frac{x}{29.600} = \frac{5}{8}$

$x = \frac{5}{8}(29{,}600) = 18{,}500$

94. **(G)** Figure out how many different topping pairs are possible. Use 1, 2, 3, 4, 5, 6, 7 to represent the toppings and create a list of possible pairs:

1,2; 1,3; 1,4; 1,5; 1,6; 1,7
2,3; 2,4; 2,5; 2,6; 2,7
3,4; 3,5; 3,6; 3,7
4,5; 4,6; 4,7
5,6; 5,7
6,7

So there are 21 different topping combinations for one pizza.

Since there are 3 pizza sizes, multiply the total number of combinations by 3 to get the total number of different pizzas Cody can create: $3 \times 21 = 63$.

---

95. **(D)** To find by what percent the number of families with 1 cat is greater than the number of families with 2 cats, calculate the difference between the two numbers and divide by the number of families with 2 cats:

$\frac{42 - 35}{35} = \frac{7}{35} = \frac{1}{5} = 0.20$ or 20%.

96. **(H)** One side of the square base is 3 ft long. Since the height of the box is 3 times the length, then the height is $3 \times 3 = 9$ ft. The volume of a rectangular prism is length $\times$ height $\times$ width. The volume of the wooden box is:

$V = 3 \times 3 \times 9 = 81$ cu ft.

---

97. **(B)** Calculate each mean speed:

$$R = \frac{65}{5} = 13 \text{ kph}$$

$$S = \frac{72}{4} = 18 \text{ kph}$$

Then calculate the difference of both mean speeds:

$S - R = 18 - 3 = 5$ kph

98. **(G)**



Find the midpoint of PQ and RS:

$$\text{Midpoint of PQ} = \frac{-1 - (-3)}{2} = \frac{2}{2} = 1 \text{ unit}.$$

The midpoint of PQ is located 1 unit from each endpoint, so the midpoint is at −2.

$$\text{Midpoint of RS} = \frac{2 - 0}{2} = \frac{2}{2} = 1 \text{ unit}.$$

The midpoint of RS is located 1 unit from each endpoint, so the midpoint is at 1. The distance between the two midpoints is $1 - (-2) = 3$ units.

---

99. **(D)** If 1 L = 1,000 cu cm, then 1 L = 1,000 mL. Set up a proportion, letting x = the amount of cubic millimeters in 1,000 cubic centimeters.

$$\frac{1{,}000 \text{ cu mm}}{1 \text{ L}} = \frac{x \text{ cu mm}}{1{,}000 \text{ cu mm}}$$

Solve for x: 1,000,000 cubic millimeters are in 1,000 cubic centimeters.

---

100. **(E)** Both $x + 1$ and $y + 2$ are radii (each is a radius). So, set them equal to each other and solve for y.

$y + 2 = x + 1$

$y = x - 1$

101. (C) There are 5 sections between M and T. To find the length of one of these sections, find the distance between M and T and divide by 5:

$$\left(\frac{5}{8}-\left(-\frac{1}{4}\right)\right)\div\frac{5}{1}=$$

$$\left(\frac{5}{8}+\frac{2}{8}\right)\div\frac{5}{1}=$$

$$\frac{7}{8}\div\frac{5}{1}=\frac{7}{8}\times\frac{1}{5}=\frac{7}{40}$$

R is 3 sections away from M, so add:

$$-\frac{1}{4}+3\left(\frac{7}{40}\right)=-\frac{10}{40}+\frac{21}{40}=\frac{11}{40}$$

R is located at $\frac{11}{40}$.

---

102. (H) Let x be the number of minutes Phan used his internet service in the month. Phan's monthly charges were $18 + 0.024x$. Since Deion's charges were the same as Phan's, set the expression equal to 30 and solve for x:

$18 + 0.024x = 30$
$0.024x = 12$
$x = 500$

Phan used his service for 500 minutes.

103. (C) The height of the triangle is 4 units. The length of the base is $n - m$. So the area is

$$A=\frac{1}{2}(n-m)(4)=2(n-m).$$

---

104. (E) $0.06 = \frac{6}{100}$. Simplify the fraction to find the answer

$\frac{6}{100}=\frac{3}{50}$ so, $x = 3$.

---

105. (B) Create a chart using the given information and use subtraction to figure out how many cars are not red **and** do not have a back-up camera:

	Red	**Not Red**	**TOTAL**
Back-up Camera	4	**6 (10-4)**	10
No back-up Camera		**32 (38-6)**	
TOTAL	12	**38 (50-12)**	50

The probability of selecting a car that meet both conditions from the total of 50 cars at the dealership is:

$\frac{32}{50}=\frac{16}{25}$.

106. (F) The total number of cards in the box is $8 + 6 + 5 + 4 + 1 = 24$. Set up a proportion to figure out which card has exactly a 1 in 4 chance of being picked at random. $\frac{x}{24} = \frac{1}{4}$ or $x = 6$. The dog card has a 1 in 4 chance of being randomly selected.

---

107. (C) Separate the compound inequality into two pieces:

$2x - 2 \le y$ and $y \le 4x + 10$

Substitute $y = 1$ into each inequality and solve for x:

$$2x - 2 \le 1$$
$$2x \le 3$$
$$x \le \frac{3}{2}$$

$$1 \le 4x + 10$$
$$-9 \le 4x$$
$$-\frac{9}{4} \le x$$

The solution is the number line that shows that x is greater than or equal to $-2\frac{1}{4}$ and less than or equal to $1\frac{1}{2}$.

108. (G) $\frac{14}{21} = \frac{p}{7}$

$21p = 7(14)$

$21p = 98$

$p = \frac{98}{21} = \frac{14}{3}$

---

109. (A) The total number of balls in the box is $7 + 14 + 21 = 42$.

The probability that the ball is black is $\frac{7}{42} = \frac{1}{6}$.

---

110. (G) None of the 80 students $(800 - 720)$ who answered "no" to Question A $(800 - 720)$ could have answered "yes" to both questions. Therefore, the least possible number of students who could have answered "yes" to both questions, can be found by subtracting the 80 who answered "no" to Question A from the 640 who answered "yes" to Question B or $640 - 80 = 560$.

---

111. (A) Raoul is at least 3 years older than Vahn, which can be written as:

$$r \ge v + 3.$$

Rewrite this inequality to match the answer options:

$$r - v \ge 3$$

112. (F) Since 5.6 ricks and 12.88 dalts are both equal to 1 sind, then 5.6 ricks = 12.88 dalts. To calculate the number of dalts (d) in 1 rick, set up a proportion:

$$\frac{5.6}{12.88} = \frac{1}{d}$$

$5.6d = 12.88$

$d = 2.3$

113. (D) The shelf, when full, holds 36 cans. When the shelf is half full, it holds 18 cans.

$x - 4 = 18$

$x = 22$

114. (G) The probability of the cup landing on its side is 72%. Carlos tossed the cup a total of 200 times (50 + 150). The number of times the cup lands on its side is 72% of 200:

$0.72 \times 200 = 144$

Answer Key for Sample Form B

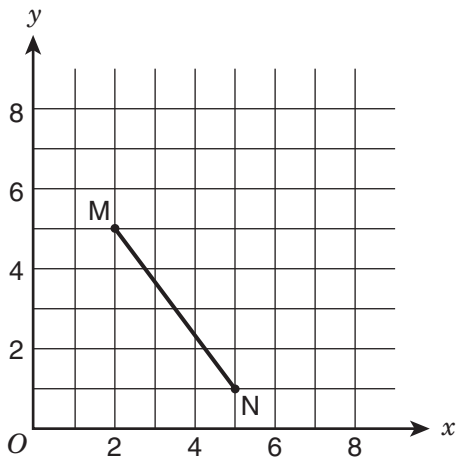
1. C	14. G	27. A	40. G	53. C	66. F	79. C	92. E	105. B
2. F	15. A	28. F	41. D	54. H	67. C	80. F	93. D	106. F
3. C	16. G	29. D	42. E	55. B	68. F	81. B	94. G	107. C
4. H	17. A	30. G	43. B	56. G	69. D	82. G	95. D	108. G
5. B	18. G	31. C	44. F	57. A	70. G	83. B	96. H	109. A
6. H	19. B	32. E	45. C	58. 120	71. C	84. F	97. B	110. G
7. C	20. G	33. B	46. E	59. 3	72. F	85. C	98. G	111. A
8. E	21. B	34. F	47. A	60. -3.4	73. C	86. G	99. D	112. F
9. C	22. F	35. D	48. F	61. 300	74. H	87. B	100. E	113. D
10. F	23. D	36. E	49. D	62. 65	75. D	88. F	101. C	114. G
11. B	24. F	37. A	50. F	63. D	76. F	89. D	102. H	
12. H	25. A	38. G	51. D	64. E	77. A	90. E	103. C	
13. B	26. H	39. C	52. G	65. D	78. H	91. B	104. E	

Blank grids are provided on page 254.

1. Assume $S(x)$ equals the sum of all positive even integers less than or equal to x. What is the value of $S(7)$?

2. $\sqrt{16} \cdot \sqrt{196} =$

3.



If $\overline{MN}$ is translated 1 unit to the left to produce M'N', what is the area of parallelogram NMM'N'?

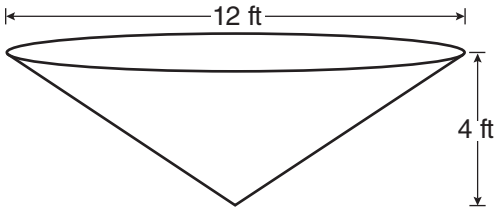
A. 3 square units
B. 4 square units
C. 5 square units
D. 6 square units

4. Simplify:

$$\frac{p^{12} \cdot p^{0}}{p^{-4}}$$

E. 0
F. p^{-3}
G. p^{8}
H. p^{16}

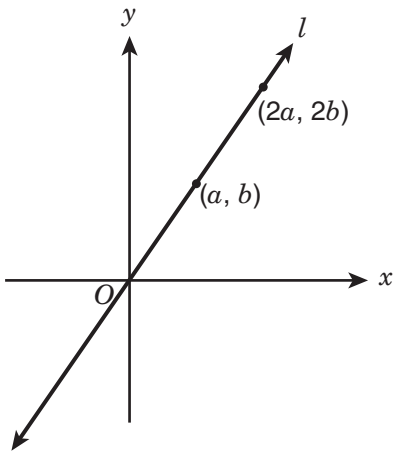
5.



Water is pumped into a tank that is shaped like the right inverted cone shown above. The cone has a base diameter of 12 feet and a height of 4 feet. What is the volume, in cubic feet, of the water in the tank when the height of the water is 2 feet?

A. 6π cu ft
B. 18π cu ft
C. 24π cu ft
D. 48π cu ft

6.



Straight line l passes through the origin, as shown in the figure above. What is the slope of line l in terms of a and b?

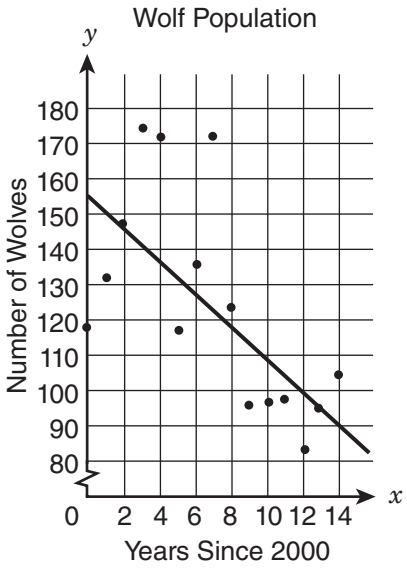
E. $\frac{a}{b}$

F. $\frac{2b}{a}$

G. $\frac{2a}{b}$

H. $\frac{b}{a}$

7. The graph shows the wolf population in Yellowstone National Park since 2000. A student drew a line of best fit to model the data.



Which statement best describes the line of best fit that the student drew?

A. The line of best fit is not a strong model for the data, because the points are not close to the line.

B. The line of best fit is not a strong model for the data, because it does not pass through any of the data points.

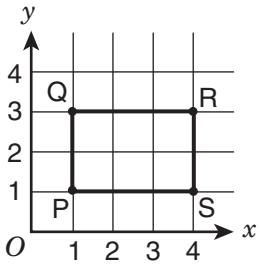
C. The line of best fit is a strong model for the data, because both the line and the data show a negative trend.

D. The line of best fit is a strong model for the data, because about half the data points are on each side of the line.

8. To determine the price of servicing a car, a mechanic charges a fixed fee plus an hourly rate for each hour he works. If his price for 4 hours of service is $270, and his price for 7 hours of work is $420, what is the fixed fee that the mechanic charges?

E. $50
F. $60
G. $70
H. $120

9.



Rectangle PQRS above is rotated 180° about the origin to form rectangle P'Q'R'S'. What are the coordinates of R'?

A. $(4, -3)$
B. $(-4, 3)$
C. $(-4, 1)$
D. $(-4, -3)$

10. $$\frac{15.3 \times 10^{-8}}{1.5 \times 10^{4}}$$

What is the quotient of the expression above, expressed in scientific notation?

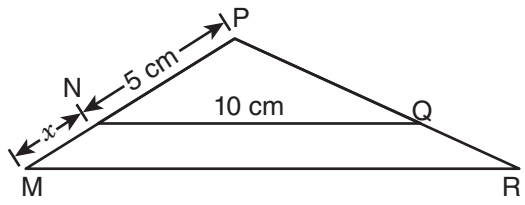
E. 1.02×10^{-13}
F. 1.02×10^{-11}
G. 1.02×10^{-4}
H. 1.02×10^{12}

---

11. Which of the following expressions is **negative** in value?

A. $4 - \pi$
B. $3\pi - 9$
C. $12 - 4\pi$
D. $36 - 9\pi$

12.



In the figure above, $\triangle MPR$ is similar to $\triangle NPQ$. If the length of $\overline{NQ}$ is 10 centimeters, what is the length of $\overline{MR}$ in terms of x?

E. $2x$

F. $2x + 10$

G. $x + 5$

H. $\frac{1}{2}x + 5$

13. The symbol $\langle x, y, z \rangle$ means $\frac{xz + xy}{2} + zy$. What is the value of $\langle 3, 4, 8 \rangle$?

A. 15

B. 34

C. 50

D. 56

1. **(12)** $S(x)$ is the sum of all positive even integers less than or equal to x. 1, 2, 3, 4, 5, and 6 are all integers less than 7. Take the positive integers from the list and find the sum:

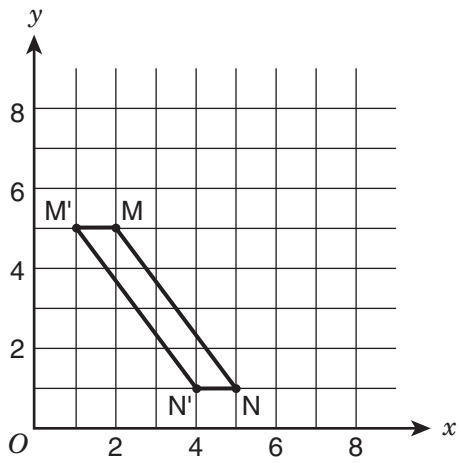
$S(7) = 2 + 4 + 6 = 12$

---

2. **(56)** $\sqrt{16} \cdot \sqrt{196} = 4 \cdot 14 = 56$

---

3. **(B)** When $\overline{MN}$ is translated 1 unit left, the distance between M′ and M is 1 unit, which is the base of the parallelogram. The height of the parallelogram is the vertical distance from M to N. Since M is at $y = 5$ and N is at $y = 1$, the height is $5 - 1 = 4$ units. The area of a parallelogram is base $\times$ height, so the area is $1 \times 4 = 4$ square units.

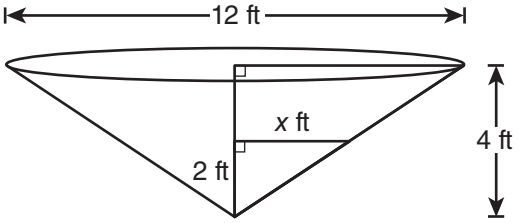


4. **(H)** $\dfrac{p^{12} \cdot p^{0}}{p^{-4}} = \left(p^{12} \cdot p^{0}\right)\dfrac{p^{4}}{1} =$

$p^{(12+0+4)} = p^{(12+4)} = p^{16}$

---

5. **(A)** Find the radius when the depth of the water is 2 ft. Set up two similar right triangles as shown below:



Use a proportion to find x. Since the diameter of the right inverted cone is 12 ft, the radius is 6 ft:

$\dfrac{x}{6} = \dfrac{2}{4}$

$x = 3$ ft

Find the volume of the cone with a radius of 3 ft and a height of 2 ft:

$V = \dfrac{1}{3}r^2\pi h = \dfrac{1}{3}\left(3^2\right)\pi(2) = 3\pi(2) = 6\pi$

6. **(H)** Use the slope formula to figure out the slope of line ℓ.

Slope of line $\ell = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2b - b}{2a - a} = \frac{b}{a}$

---

7. **(A)** The question asks to describe the line of best fit for the graph. The line of best fit is a strong model when the most of the points are close to the line as possible. In this case, very few of the points are on or next to the line. Since there aren't many points close to the line, this is not a strong model for the data.

---

8. **(G)** Set up the two equations and subtract them from one another to find the price per hour:

$(y + 7x = 420) - (y + 4x = 270)$

$3x = 150$

$x = 50$

To find the fixed fee, use one of the equations ($y + 7x = 420$ or $y + 4x = 270$) and solve for y, using $x = 50$.

$y + 4x = 270$

$y + 4(50) = 270$

$y + 200 = 270$

$y = 70$

9. **(D)** Point R is at $(4, 3)$. If (x, y) is rotated 180° about the origin: $R(x, y) \rightarrow (-x, -y)$. Therefore, $R(4, 3) \rightarrow (-4, -3)$.

---

10. **(F)** $\frac{15.3 \times 10^{-8}}{1.5 \times 10^{4}} = \left(\frac{15.3}{1.5}\right) \times \frac{10^{-8}}{10^{4}} =$

$10.2 \times \frac{10^{-8}}{10}$

Use the rule of exponents to simplify.

$10.2 \times 10^{(-8-4)} = 10.2 \times 10^{-12}$

Rewrite the answer so that it is standard scientific notation form.

1.02×10^{-11}

---

11. **(C)** Substitute the approximation $\pi = 3.14$ into each expression and solve to find which expression results in a negative value:

$4 - \pi = 0.86$

$3\pi - 9 = 0.42$

$12 - 4\pi = -0.56$

$36 - 9\pi = 7.74$

So, the answer is $12 - 4\pi$.

12. **(F)** Triangles NPQ and MPR are similar. Corresponding sides of the triangles are proportional. Set up a proportion to find $\overline{MR}$.

$$\frac{\overline{MR}}{\overline{MP}} = \frac{\overline{NQ}}{\overline{NP}}$$
$$\frac{\overline{MR}}{x+5} = \frac{10}{5}$$
$$5\left(\overline{MR}\right) = 10(x+5)$$
$$5\left(\overline{MR}\right) = 10x + 50$$
$$\overline{MR} = 2x + 10$$

13. **(C)** $x = 3$, $y = 4$, and $z = 8$. Substitute those values into the equation and simplify.

$$\frac{(3 \cdot 8) + (3 \cdot 4)}{2} + (8 \cdot 4) =$$
$$\frac{24 + 12}{2} + 32 =$$
$$\frac{36}{2} + 32 =$$
$$18 + 32 = 50$$

Answer Key for Grade 9 Mathematics

1. 12	6. H	11. C
2. 56	7. A	12. F
3. B	8. G	13. C
4. H	9. D	
5. A	10. F	

GRADE 8 GRID-IN SAMPLE PROBLEMS

DIRECTIONS: Solve each question. You can use the extra grid-in answer sheet on page 254 to record your answers. 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**.

1. On a practice test, there are 3 essay questions for every 7 multiple-choice questions. If there are a total of 420 questions on this test, how many of those are essay questions?

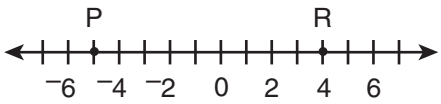
2. $|19 - 21| + |1.9 - 2.1| - x = 10$

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

3. $$\frac{0.21}{0.33} = \frac{x}{1.10}$$

What is the solution to the equation above?

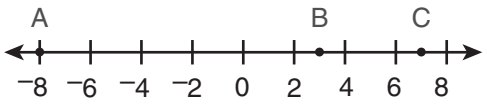
4.



Point Q is to be placed on the number line one-third of the way from Point P to Point R. What number will be at the midpoint of segment PQ?

5. How many ways can the letters in the word RAIN be arranged horizontally so that the vowels (A and I) are always immediately next to each other (either AI or IA)?

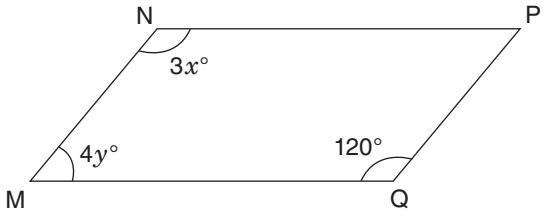
6.



On the number line above, D (not shown) is the midpoint of $\overline{AB}$, and E (not shown) is the midpoint of $\overline{BC}$. What is the midpoint of $\overline{DE}$?

7. A box contains 11 marbles: 7 red and 4 green. Five of these marbles are removed at random. If the probability of drawing a green marble is now 0.5, how many red marbles were removed from the box?

8.



MNPQ is a parallelogram. The measure of $\angle MQP$ is 120°. What is the value of $x + y$?

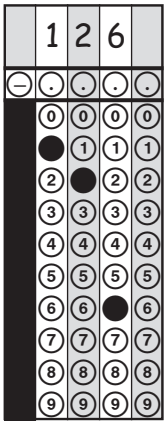
9. Maria is now 16 years old. In 6 years, she will be twice as old as her brother will be at that time. How old is her brother now?

10. $\frac{4.5}{0.1} \times 0.22 =$

1. **(126)** There are 3 essay questions for every 7 multiple-choice questions, for a total of 10 questions. The proportion of essay questions is $\frac{3}{10}$. Multiply the fraction of essay questions by 420 to find the total number of essay questions:

$$420 \times \frac{3}{10} = \frac{1260}{10} = 126$$

Since the answer is a positive whole number, skip the first column and place one in the second column on the left-hand side.



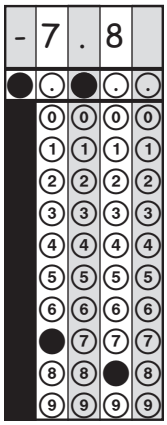
2. **(-7.8)** $|19 - 21| + |1.9 - 2.1| - x = 10$

$|-2| + |-0.2| - x = 10$

$2 + 0.2 - x = 10$

$x = -7.8$

Since the answer is a negative, begin filling out the grid with the negative sign in the first column. The answer contains a negative sign, a whole number, a decimal point, and a digit in the tenths place. Each part of the answer, including the decimal point, should be placed in a separate column, with no blank spaces between them.



3. **(0.7)** $\frac{0.21}{0.33} = \frac{x}{1.10}$

Multiply the numerators and denominators of all the fractions by 100 to eliminate the decimals:

$\frac{21}{33} = \frac{100x}{110}$

Simplify the fractions:

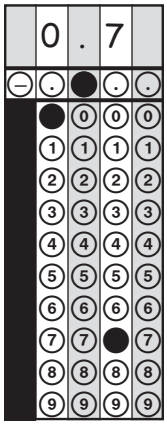
$\frac{7}{11} = \frac{10x}{11}$

$7(11) = 10x(11)$

$7 = 10x$

$x = \frac{7}{10} = 0.7$

Since the answer is a positive decimal, skip the first column and place the zero in the second column on the left-hand side.



4. **(-2)** Find the length of $\overline{PR}$: $4 - (-5) = 9$ units

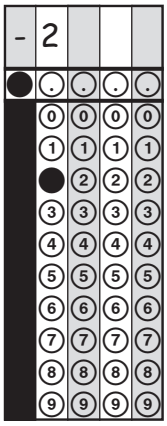
Point Q is located $\frac{1}{3}$ of the way from P to R, so calculate where that point would be:

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

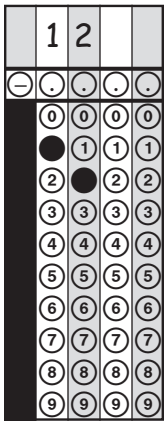
Point Q is located at $4 - 3 = 1$. Calculate the midpoint of $\overline{PQ}$:

Midpoint $\overline{PQ} = \frac{-5 + 1}{2} = -2$

Since the answer is a negative single-digit, fill in the negative sign in the first column and the second column contains the digit, 2.



5. **(12)** There are three positions for the letters AI in the four letter combinations: AI _ _ , _ AI _ _ , and _ _ AI
For each of those positions of A and I, there are two combinations of the letters R and N: AIRN, AINR, RAIN, NAIR, RNAI, NRAI. So, for the letters AI (in that order), there is a total of 6 combinations. The question mentions that IA is also possible, so there are also additional combinations with the letters in the order IA. The total number of combinations is $6 + 6 = 12$
Since the answer is a positive whole number, skip the first column and begin placing the one in the second column.



6. **(1.25)** Calculate the midpoints of $\overline{AB}$ and $\overline{BC}$ to find the locations of D and E, respectively:

Find the midpoint for $\overline{AB}$ (Point D):

$$D = \frac{-8 + 3}{2} = \frac{-5}{2} = -2.5$$

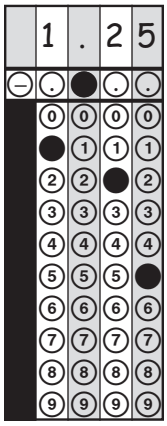
Find the midpoint for $\overline{BC}$ (Point E):

$$E = \frac{3 + 7}{2} = 5$$

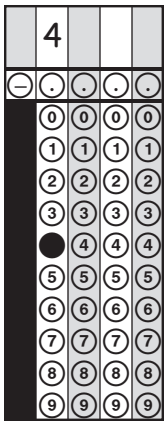
Now, find the midpoint of $\overline{DE}$:

$$\frac{-2.5 + 5}{2} = \frac{2.5}{2} = \frac{5}{4} = 1.25$$

Since the answer is a positive decimal, skip the first column and the first digit, number one, begins in the second column on the left-hand side.



7. **(4)** There were 11 marbles in the box. After 5 marbles were removed, the total number of marbles in the box is now 6. The probability of drawing a green marble is now $\frac{1}{2}$, which is equivalent to $\frac{3}{6}$, thus, 3 green marbles remain in the box. Originally, there were 7 red marbles in the box. Since there are now 6 total marbles, there are now 3 red marbles. Meaning 4 red marbles were removed from the box. Since the answer is a positive single-digit whole number, skip the first column and the response, four, begins on the second left-hand column.



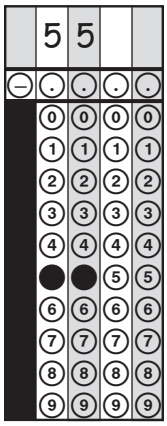
8. **(55)** In a parallelogram, opposite angles are congruent. Since the question states that angle MQP is 120°, then angle MNP must also be 120°. Use this information to find x:

$3x = 120$
$x = 40$

Adjacent angles in a parallelogram are supplementary (sum of 180°), so the sum of angle MQP and angle NMQ is equal to 180°. Use this information to find y:

$4y + 120 = 180$
$4y = 60$
$y = 15$

The question asks for the value of $x + y$, so $x + y = 40 + 15 = 55$
Since the answer is a positive whole number, skip the first column and place the first digit to the answer, five, in the second column on the left-hand side.



9. **(5)** When Maria is 22, she will be twice as old as her brother.

Let x = the age of Maria's brother when Maria is 22.

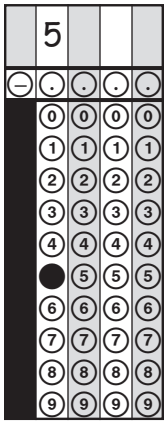
$2x = 22$

$x = 11$

To find Maria's brother's current age, subtract $11 - 6 = 5$.

Maria's brother is currently 5 years old.

Since the answer is a positive single-digit whole number, skip the first column and the response begins in the second left-hand column.

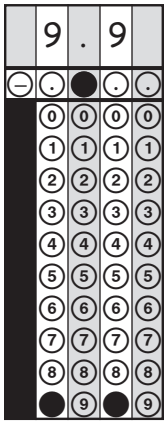


10. **(9.9)** In order to solve this problem, convert $\frac{4.5}{0.1}$ to a whole number by multiplying the numerator and denominator by 10 to get $\frac{45}{1}$ which is 45.

Multiply:

$45 \times 0.22 = 9.9$

Since the answer is a positive whole number with a decimal, skip the first column and place the first digit, 9, of the answer starting in the second column on the left-hand side.



Answer Key for Grid-In Mathematics

1. 126	6. 1.25
2. –7.8	7. 4
3. 0.7	8. 55
4. –2	9. 5
5. 12	10. 9.9

2021 NEW YORK CITY PUBLIC SCHOOLS

USE A PENCIL ONLY

SIDE 1

SPECIALIZED HIGH SCHOOLS ADMISSIONS TEST

GRADE 8

8

1. **STUDENT STATEMENT:** I am well enough to take this test and complete it. I understand that once I break the seal of the test booklet, I may not be eligible for a make-up test. I am a New York City resident and a Grade 8 student taking a Grade 8 test. I understand that a student who is not a New York City resident, who takes the test more than once in a given school year, or who takes the test at the wrong grade level will be disqualified from acceptance to any of the specialized high schools.

Signature (full name - include your first and last name): _____

2. **TODAY'S DATE:** _____ **Month** **Day** **Year**

3. **DATE OF BIRTH:** _____ **Month** **Day** **Year**

CAREFULLY RECORD YOUR NAME, SCHOOL CHOICES, DATE OF BIRTH, INFORMATION ABOUT THE SCHOOL WHERE YOU ARE NOW ENROLLED, AND STUDENT ID NUMBER. USE A PENCIL ONLY. INCORRECT MARKS MAY DELAY THE SCORING OF YOUR ANSWER SHEET.

4. FIRST NAME (please print) | **MI** | **LAST NAME (surname) (please print)**

5. SCHOOL CURRENTLY ENROLLED

NAME OF SCHOOL

School Code

Ⓟ Fill in for private or parochial schools only

6. DATE OF BIRTH

Month	Day	Year
JAN	1 11 21	20 0 0
FEB	2 12 22	1 1
MAR	3 13 23	2 2
APR	4 14 24	3 3
MAY	5 15 25	4 4
JUN	6 16 26	5 5
JUL	7 17 27	6 6
AUG	8 18 28	7 7
SEP	9 19 29	8 8
OCT	10 20 30	9 9
NOV	31	
DEC		

7. STUDENT ID NUMBER

8. BOOKLET LETTER AND NUMBER

Ⓛ Ⓜ Ⓟ Ⓠ

Printed in the USA by Pearson ISD34457

CC

NEW YORK CITY PUBLIC SCHOOLS

USE A PENCIL ONLY

SIDE 2

2021 SPECIALIZED HIGH SCHOOLS ADMISSIONS TEST

GRADE 8

Test Booklet Letter _____ Test Booklet Number _____

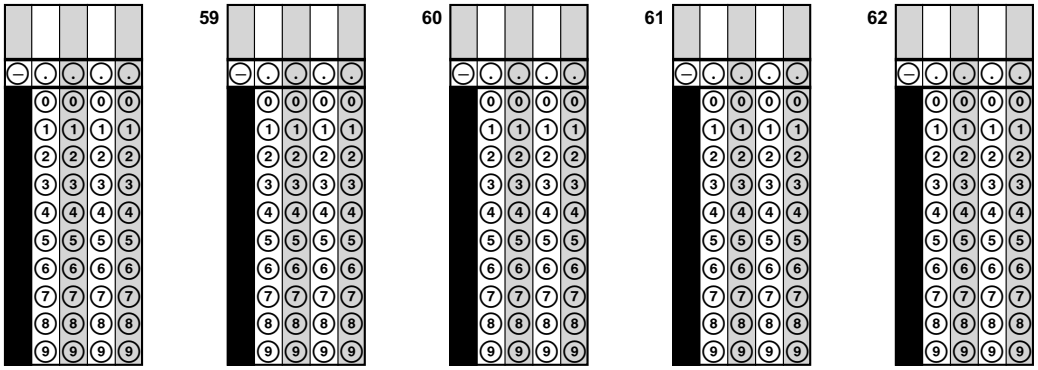
Student's First Name (please print) _____ Student's Last Name (please print) _____

PART 1 ENGLISH LANGUAGE ARTS

1	A	B	C	D	16	E	F	G	H	31	A	B	C	D	46	E	F	G	H
2	E	F	G	H	17	A	B	C	D	32	E	F	G	H	47	A	B	C	D
3	A	B	C	D	18	E	F	G	H	33	A	B	C	D	48	E	F	G	H
4	E	F	G	H	19	A	B	C	D	34	E	F	G	H	49	A	B	C	D
5	A	B	C	D	20	E	F	G	H	35	A	B	C	D	50	E	F	G	H
6	E	F	G	H	21	A	B	C	D	36	E	F	G	H	51	A	B	C	D
7	A	B	C	D	22	E	F	G	H	37	A	B	C	D	52	E	F	G	H
8	E	F	G	H	23	A	B	C	D	38	E	F	G	H	53	A	B	C	D
9	A	B	C	D	24	E	F	G	H	39	A	B	C	D	54	E	F	G	H
10	E	F	G	H	25	A	B	C	D	40	E	F	G	H	55	A	B	C	D
11	A	B	C	D	26	E	F	G	H	41	A	B	C	D	56	E	F	G	H
12	E	F	G	H	27	A	B	C	D	42	E	F	G	H	57	A	B	C	D
13	A	B	C	D	28	E	F	G	H	43	A	B	C	D					
14	E	F	G	H	29	A	B	C	D	44	E	F	G	H					
15	A	B	C	D	30	E	F	G	H	45	A	B	C	D					

PART 2 MATHEMATICS

58 59 60 61 62



63	A	B	C	D	76	E	F	G	H	89	A	B	C	D	102	E	F	G	H
64	E	F	G	H	77	A	B	C	D	90	E	F	G	H	103	A	B	C	D
65	A	B	C	D	78	E	F	G	H	91	A	B	C	D	104	E	F	G	H
66	E	F	G	H	79	A	B	C	D	92	E	F	G	H	105	A	B	C	D
67	A	B	C	D	80	E	F	G	H	93	A	B	C	D	106	E	F	G	H
68	E	F	G	H	81	A	B	C	D	94	E	F	G	H	107	A	B	C	D
69	A	B	C	D	82	E	F	G	H	95	A	B	C	D	108	E	F	G	H
70	E	F	G	H	83	A	B	C	D	96	E	F	G	H	109	A	B	C	D
71	A	B	C	D	84	E	F	G	H	97	A	B	C	D	110	E	F	G	H
72	E	F	G	H	85	A	B	C	D	98	E	F	G	H	111	A	B	C	D
73	A	B	C	D	86	E	F	G	H	99	A	B	C	D	112	E	F	G	H
74	E	F	G	H	87	A	B	C	D	100	E	F	G	H	113	A	B	C	D
75	A	B	C	D	88	E	F	G	H	101	A	B	C	D	114	E	F	G	H

Copyright © 2021 NCS Pearson, Inc. All Rights Reserved.
Reprinted by Permission—Restricted Edition—Not for Distribution

Blank Math Grid-Ins to Be Used with Sample Items.

