

TEASPATH

TEAS 7 STUDY GUIDE

READING • MATH • SCIENCE • ENGLISH



From foundations to exam day.

teaspath.com

01 Build your route and establish a baseline

Start with a route you can actually use

You do not need to remember everything you once learned before you begin. You need to find a starting point, learn one idea clearly, and practice using it without the explanation in front of you. This book gives you a sequence for doing that across reading, mathematics, science, and English.

A missed question is information about an attempt. It is not a verdict about your ability. Perhaps a word was unfamiliar. Perhaps you selected the right operation but made an arithmetic error. Perhaps you understood the idea when you read it but could not recall it later. Those situations need different responses. As you work, your job is to make the next study decision more specific than "I am bad at science" or "I need more practice."

By the end of this chapter, you will have a record of your program's requirements, a realistic first-week plan, and a simple method for deciding what to study next. You will also know how to preserve the full-length practice test for a useful later attempt.

Know the exam you are preparing for

The research foundation for this edition uses the ATI TEAS Version 7 blueprint. The exam contains four sections in this order:

Section	Total questions	Scored questions	Unscored pretest questions	Standard testing time
Reading	45	39	6	55 minutes
Mathematics	38	34	4	57 minutes
Science	50	44	6	60 minutes
English and Language Usage	37	33	4	37 minutes
Total	170	150	20	209 minutes

The standard schedule includes a 10-minute break after Mathematics. That break is separate from the 209 testing minutes. Registration, check-in, instructions, and other administration steps also require time. Approved accommodations can change an individual's testing conditions.

The official exam includes multiple-choice, multiple-select, fill-in, ordered-response, and hotspot questions. A hotspot asks you to select a location in an image. A multiple-select item can have more than one correct choice; follow its directions carefully. The official descriptions reviewed for this book differ on whether fill-in responses are described as numeric only or text or numbers. Use the current official instructions for your administration. Each practice task here specifies its own response and rounding requirements.

Paper cannot reproduce every on-screen action. Writing a sequence of letters or selecting a labeled region can practice the underlying reasoning, but it is an adapted response method. It does not establish that the paper

10 Put numbers on a meaningful scale

Real value versus appearance

Numbers can wear different disguises. A single amount can be written as a fraction, a decimal, or a percentage. For example, half of a pie is the same amount of food whether you call it $\frac{1}{2}$, 0.5, or 50%. These different formats are just different ways of expressing the exact same numerical quantity.

To succeed on the TEAS, you must learn to look past a number's appearance and evaluate its true value. You will need to convert confidently between fractions, decimals, and percentages. You will also need to compare numbers that are written in different formats and order them on a number line, including negative values.

Prerequisites: Place value and the meaning of fractions

Before learning conversion rules, we must repair two common misunderstandings: how decimal places work, and what a fraction actually means.

Reading place value

In our base-ten number system, the position of a digit determines its value. To the left of the decimal point, we have ones, tens, hundreds, and so on. To the right of the decimal point, the values become fractional pieces of a whole:

- The first place to the right is the **tenths** place ($\frac{1}{10}$).
- The second place is the **hundredths** place ($\frac{1}{100}$).
- The third place is the **thousandths** place ($\frac{1}{1000}$).

A number like 0.73 is read mathematically as "seventy-three hundredths." We can write this directly as the fraction $\frac{73}{100}$. A number like 0.4 is "four tenths," which is $\frac{4}{10}$. More digits after the decimal point do not automatically mean a larger number. For example, 0.45 has two digits while 0.6 has only one, but 0.6 is six tenths (or sixty hundredths), which is larger than forty-five hundredths.

The division meaning of a fraction

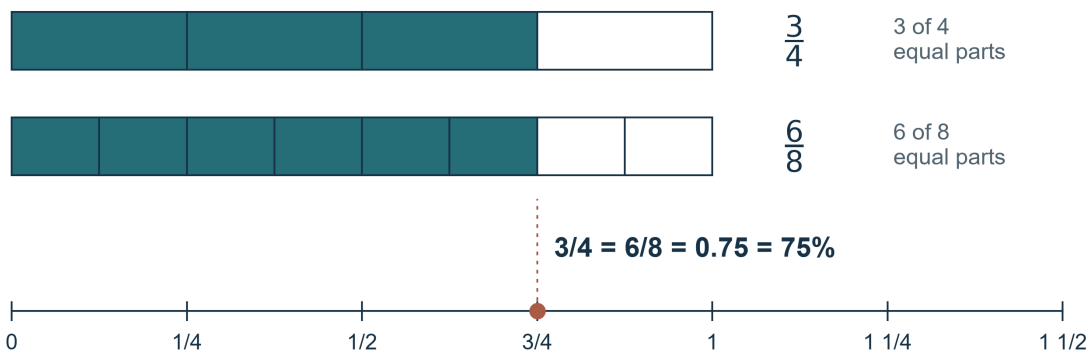
Every fraction is a division problem waiting to be solved. The fraction bar literally means "divided by." In the fraction $\frac{3}{4}$, the top number (the numerator) represents the number of pieces you have. The bottom number (the denominator) represents how many equal-size pieces make up one whole in this part-of-a-whole model. A fraction's denominator cannot be zero. Therefore, $\frac{3}{4}$ means 3 divided by 4.

For unit fractions of the same whole, a larger positive denominator means smaller individual pieces. With a fixed positive numerator, increasing a positive denominator decreases the value. If both numerator and denominator change, compare the actual values rather than applying that shortcut. One eighth ($\frac{1}{8}$) is much smaller than one half ($\frac{1}{2}$), even though 8 is larger than 2.

One quantity, several representations

Equivalent fractions

Equal wholes; different partitions



A fraction, decimal and percentage can identify the same quantity.

Both bars represent a whole of the same size. Three fourths and six eighths cover the same length; their shared number-line location is 0.75, or 75%.

Figure description: Two equally long bars show 3 of 4 equal parts and 6 of 8 equal parts shaded. A number line from 0 to 1.5 marks their common location at 0.75.

Practice independently

Attempt these without checking the worked examples. Record whether you used help. Return to the explanations after completing the set.

Question 1

Convert $9/5$ into a percentage.

- A. 18%
- B. 95%
- C. 180%
- D. 1.8%

Question 2

Arrange the following rational numbers in order from greatest to least.

- A. 1.05
- B. $11/10$
- C. 101%
- D. $8/9$

Your sequence: _____

Question 3

Convert 0.045 to a fraction in simplest form.

- A. $9/20$
- B. $9/200$
- C. $45/1000$
- D. $9/2000$

Question 4

Which of the following values is the smallest?

- A. -0.7
- B. $-3/4$
- C. -72%
- D. $-4/5$

2. Divide the amount of change by the Original Value (the Base), then convert that decimal to a percent.

Relative change = (New value - Original value) / Original value

The examples here use a positive original value. If the original value is zero, this formula would divide by zero, so the relative percent change is undefined. You can still report the absolute change. For a decrease, either retain a negative sign or state the positive magnitude followed by the word decrease; keep the convention clear.

Worked Example 3: Percent change and its direction

Problem: A local youth soccer league charged a registration fee of \$40 last year. This year, the league raised the fee to \$50 to cover equipment costs. What is the percent change in the registration fee?

Reasoning and Solution: Identify the starting base. The fee changed *from* \$40 to \$50. The original starting amount is \$40, so \$40 is the Base.

Step 1: Find the amount of change. Change = New - Original Change = 50 - 40 = 10. The fee increased by exactly \$10.

Step 2: Calculate the rate of change relative to the base. Rate = Change / Base Rate = 10 / 40 Rate = 0.25

Step 3: Convert the decimal to a percent. 0.25 = 25%

Because the price went up, this is a 25% increase.

Now, imagine the reverse scenario. What if the fee had been \$50 last year, and the league *lowered* it to \$40 this year? The amount of change is still \$10. However, the *Base* is now \$50, because \$50 is the starting amount. Rate = 10 / 50 = 0.20, which is a 20% decrease.

Answer: The registration fee had a 25% increase. (*Notice that an increase of \$10 from \$40 is a 25% change, but a decrease of \$10 from \$50 is a 20% change. The base dictates the percentage. You cannot simply reverse percentages when the starting point changes.*)

Sequential Changes: Moving the Base

In the real world, percentages often stack on top of each other. A store might discount a jacket by 20%, and then apply a 10% employee discount at the register. An error is to add the percentages together (20% + 10% = 30%) and apply them all at once to the original price.

This fails because sequential percentage changes have *different bases*.

When multiple percent changes happen in a sequence, the base updates after every step. The first percentage applies to the original starting amount. The second percentage applies to the *new, intermediate* amount created by the first step.

Worked Example 4: Sequential percentage changes

Problem: A campus bookstore purchases a specialized notebook from a supplier for \$20.00. The bookstore immediately marks up the price by 10% to sell on the shelf. A month later, the bookstore places the notebook on clearance, discounting the shelf price by 10%. What is the final clearance price of the notebook?

23 Connect molecules, membranes and cells

Zooming in on life's building blocks

To understand how a living organism functions, you must understand how it is built. A human body is not a single, solid mass. It is a highly organized structure built from microscopic components. Understanding biology requires zooming in and out across different levels of organization.

At the smallest level relevant to biology, we have atoms. Atoms bond together to form molecules. When life builds very large, complex molecules, we call them macromolecules. These macromolecules combine to construct the working parts of a cell.

The cell is the fundamental unit of life. Many organisms consist of one cell. In a multicellular organism such as a human, cells and their surrounding material organize into tissues, such as a layer of muscle tissue. Different tissues combine to form an organ, such as the heart, which is made of muscle tissue, connective tissue, and nervous tissue. Organs then cooperate in organ systems. The heart works with blood vessels to form the circulatory system. Finally, multiple organ systems operate together to sustain the complete organism.

For understanding the human body, a useful organization map is: atoms -> molecules -> macromolecules -> cells -> tissues -> organs -> organ systems -> organism. By starting at the level of macromolecules and cells, you build the foundation for understanding everything else the body does.

Macromolecules: The materials of life

"Macro" means large. Macromolecules are large biological molecules built by joining smaller building blocks together. You can think of them like physical structures built from basic bricks. However, not all macromolecules use the same type of brick, and they do not all follow a simple repeating pattern.

There are four major groups of biomolecules: carbohydrates, proteins, nucleic acids, and lipids.

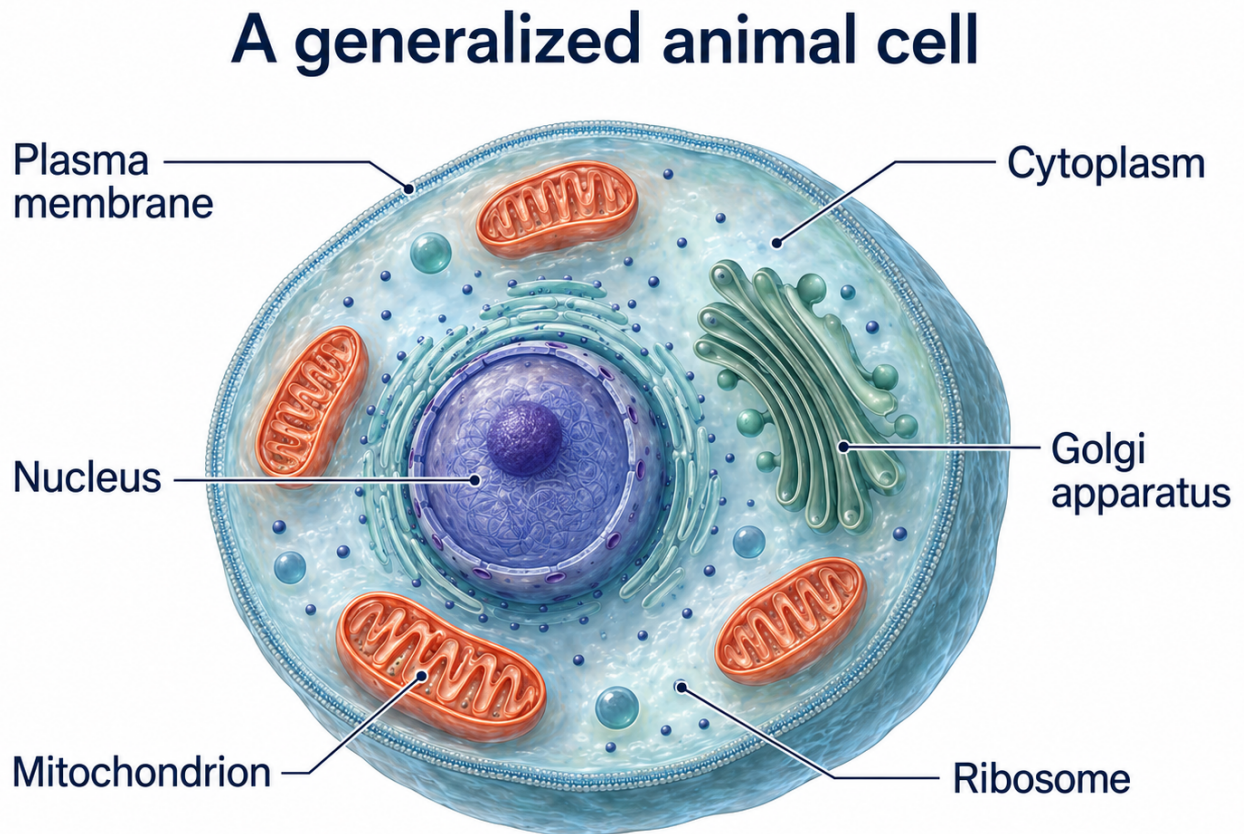
Carbohydrates

Carbohydrates are molecules built from sugar units. A single sugar unit is called a monosaccharide. When many sugar units are linked together in a long chain, they form a polysaccharide. Polysaccharides are excellent for storing energy or providing structural support. Because they are chains of repeating sugar units, their sugar identities, linkages and branching influence their properties.

Nucleic Acids

Nucleic acids include DNA (deoxyribonucleic acid) and RNA (ribonucleic acid). These macromolecules are built from smaller units called nucleotides. A nucleotide chain acts as an information storage and transfer system. The specific order of the nucleotides spells out the instructions the cell needs to operate and build other molecules. Like polysaccharides, nucleic acids are long chains of repeating building units.

A generalized animal cell



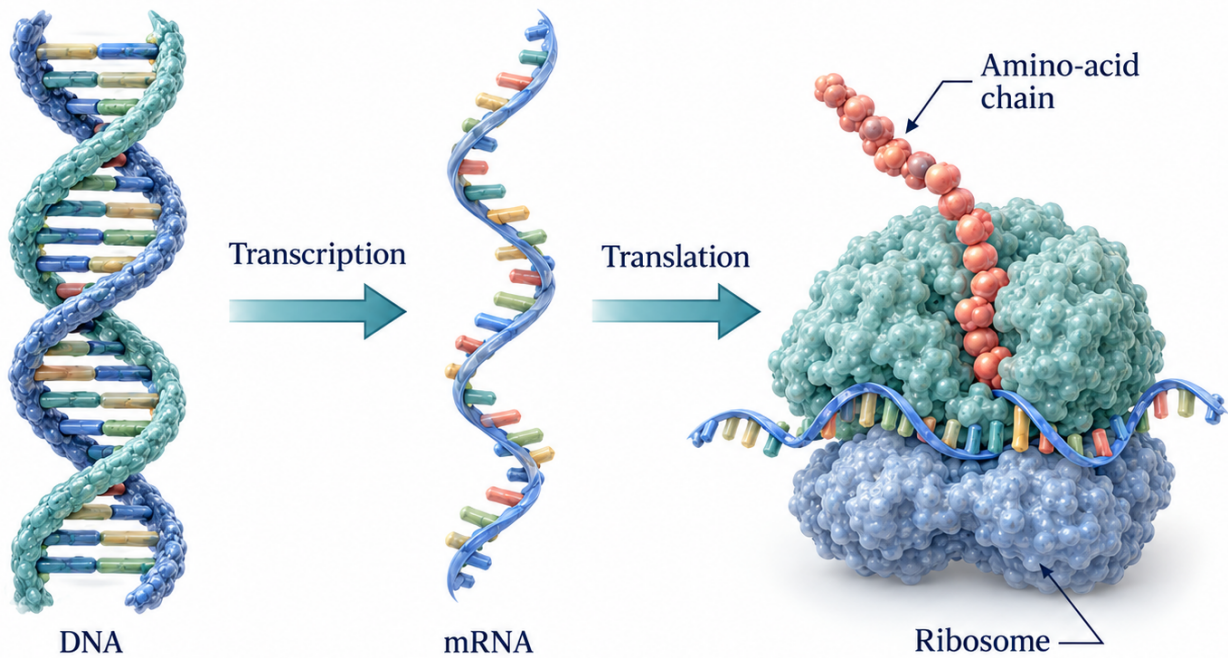
Simplified model. Structures are not shown to scale.

This simplified model highlights a membrane, cytoplasm, nucleus, mitochondrion, ribosome, and Golgi apparatus. It does not show every structure or the contents of every mature human cell. Shapes and sizes are schematic.

Figure description: A cutaway animal-cell model has a thin outer plasma membrane enclosing cytoplasm. A large nucleus lies inside. Oval mitochondria contain folded inner membranes; a small ribosome is represented by a dot; the Golgi apparatus is represented by stacked curved sacs. Each of the six named structures has its own external leader label.

A protein-coding pathway

From a protein-coding gene to a chain



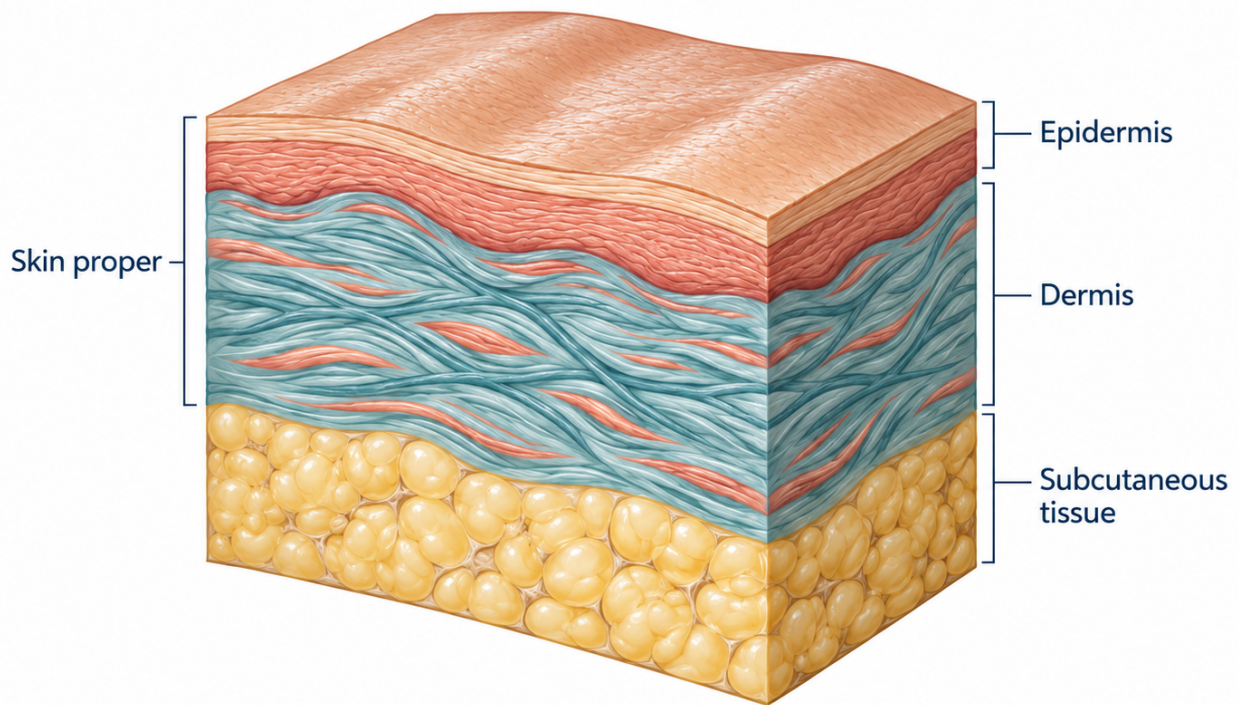
Simplified pathway — some genes produce functional RNA instead

Transcription uses DNA information to make an RNA copy; the DNA is not physically converted into RNA. During translation, a ribosome uses the mRNA sequence to assemble an amino-acid chain. Some genes instead produce functional RNA. Processing and molecular detail are omitted here.

Figure description: A DNA double helix is followed by an arrow labeled transcription leading to mRNA. A translation arrow leads to a schematic ribosome and an emerging amino-acid chain. A note states that some genes produce functional RNA instead.

Skin and the tissue beneath it

Skin and the tissue beneath it



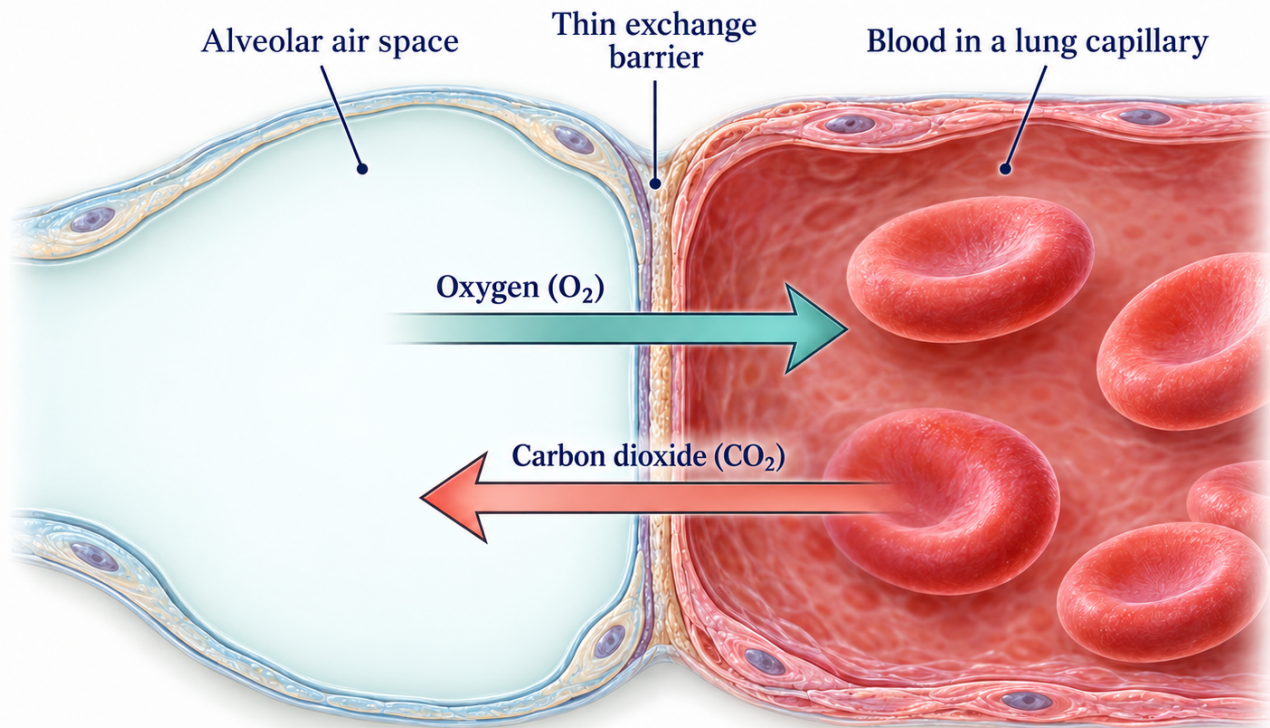
Simplified layer model – not to scale

Skin proper includes the epidermis and dermis. Subcutaneous tissue lies beneath. This simplified layer model omits vessels, nerves, glands and hair, and is not to scale.

Figure description: A skin block has an outer epidermis above a thicker dermis. A bracket marks these two layers as skin proper. A yellow region of subcutaneous tissue lies below that bracket.

Opposite directions across one thin barrier

Gas exchange at the lungs



Simplified interface — not to scale

At the lung exchange surface under ordinary gas-exchange conditions, oxygen moves from alveolar air toward blood and carbon dioxide moves from blood toward alveolar air. Arrows show net directions, not the amount or speed of diffusion.

Figure description: An alveolar air space is on the left and blood in a lung capillary is on the right. An oxygen arrow crosses the thin barrier from left to right. A carbon-dioxide arrow crosses from right to left.

Practice Form A

Use the four section clocks in order. Take a 10-minute break after Math. Use a four-function calculator for the Mathematics section and blank scratch paper. Complete each section before checking answers. Record responses on separate numbered sheets. A paper response method is an adaptation of computer formats. Your raw practice result is not an official ATI score.

For multiple-select, select every correct option. For ordered tasks, write the complete sequence of letters. For numeric tasks, follow the stated units and rounding. For the hotspot, mark the requested region or write its letter. No partial credit is used in this practice form. The scoring guide follows the questions.

Mathematics | 57 minutes

Question 1

In an invented survey, learners with longer practice time tended to report higher confidence. Which conclusion is justified by that association alone?

- A. Confidence cannot influence how much a learner chooses to practice.
- B. Practice time and reported confidence varied together in this sample.
- C. More practice necessarily caused every learner to become more confident.
- D. The association must hold for every other population.

Question 2

A toy indicator activates when $-2x \geq 10$. Which values activate it?

- A. $x \geq 5$
- B. $x \leq -5$
- C. $x \leq 5$
- D. $x \geq -5$

Question 3

Which number is closest to zero?

- A. 0.2
- B. $-1/8$
- C. $1/4$
- D. -0.15

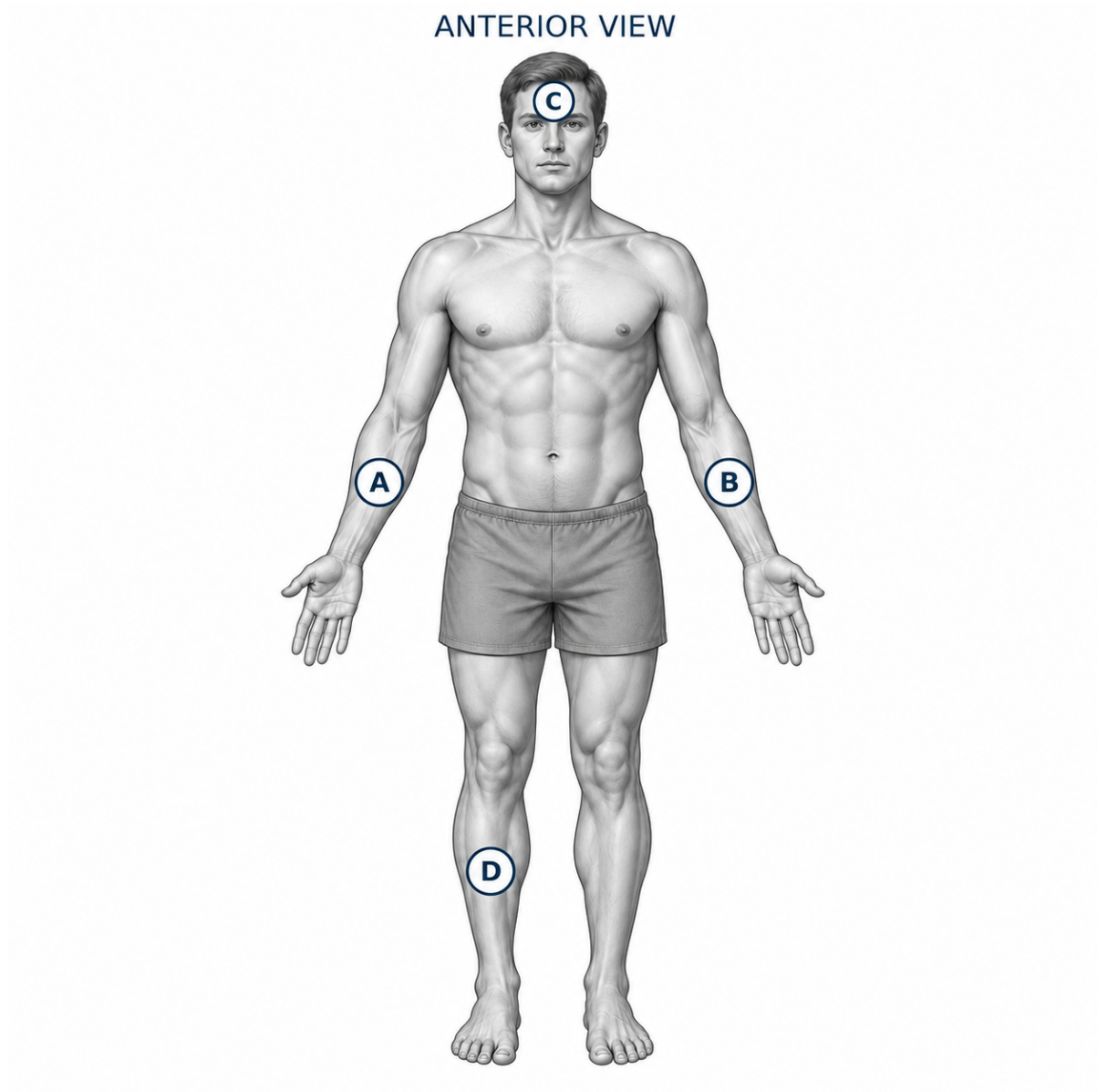
Question 4

Using 1 U.S. gallon = 3.785 L for this problem, convert 2 gallons to liters. Round to the nearest hundredth of a liter.

- A. 7.6 L
- B. 7.57 L
- C. 0.53 L
- D. 5.79 L

Question 34

The figure is a front view of a person in standard anatomical position. Mark the circle on the person's left upper limb. For this paper adaptation of a hotspot task, write the circle's letter. Do not use the viewer's left as the person's left.



Your marked region: _____

Form A explanations

Score Form A after completing all sections

Award one point for each fully correct scored item. For multiple-select items, all correct choices and no incorrect choices are required. Ordered responses must match the entire sequence. Numeric responses must match the requested value and precision; equivalent representations are accepted unless the question specifies a representation. The paper hotspot is correct when the indicated region is selected. No partial credit is used in this practice form.

The 20 simulated unscored items are listed below so you can exclude them from the reported raw result. Review their explanations too. Their designation is editorial, not an ATI pretest status.

Section	Scored denominator	Excluded item numbers in this printed section
Reading	39	4, 13, 14, 20, 32, 44
Mathematics	34	3, 34, 35, 37
Science	44	13, 17, 28, 32, 34, 49
English and Language Usage	33	9, 16, 28, 36

Section raw percent = correct scored items ÷ section scored denominator × 100. Overall raw percent = correct scored items across all four sections ÷ 150 × 100. A blank or incorrect scored response earns zero points. Do not average the four section percentages without weighting: their denominators differ.

This form has not been psychometrically calibrated, equated to ATI scores, or validated as an admissions predictor. There is no validated readiness threshold here. Use the objective and chapter routes to plan further work.

For a response sheet, number separate pages Reading 1-45, Mathematics 1-38, Science 1-50 and English 1-37. Leave room for multiple letters, ordered sequences and numeric responses. Record timing, interruptions and any help used separately.

Reading

1. Answer: A

The author uses data from a single "accelerated eighth-grade algebra class" to claim that the curriculum will guarantee high test scores for "every middle school student." Evidence from an advanced, specific subset of students is unrepresentative and insufficient to prove efficacy for all students.

B: While the author mentions passion, the argument does not claim it is the 'only' trait needed; the core flaw is the unrepresentative sample.

D: The conclusion is about guaranteeing 'high test scores,' not about measuring true mathematical ability. The flaw is in the generalization, not the definition of ability.

Study tools and quick reference

A. Choose a route, then adjust it

These schedules are planning examples, not experimentally established minimum study times. Start with the diagnostic and your actual available hours. A chapter may need more than one session. Keep a separate record of assisted learning and independent practice. Preserve the full-length form until you can use its results to plan a next step.

Route	Opening phase	Middle phase	Closing phase
12 weeks	Weeks 1-3: Chapter 1, diagnostic, reading and English foundations, Chapters 2-9	Weeks 4-6: Mathematics, Chapters 10-18. Weeks 7-10: Scientific reasoning, chemistry, biology and body systems, Chapters 19-33	Weeks 11-12: Integrate subjects, take Form A, use Chapter 34 to investigate errors, and complete delayed follow-up tasks
8 weeks	Weeks 1-2: Diagnostic and targeted reading, writing and arithmetic repair	Weeks 3-4: Remaining math, investigation and chemistry. Weeks 5-6: Cells, inheritance, microorganisms and body systems	Weeks 7-8: Mixed practice, Form A, targeted repair and fresh follow-up questions
4-week refresher	Week 1: Diagnostic and identify specific weak skills	Weeks 2-3: Selected lessons, worked examples, independent practice and delayed review	Week 4: Timed practice, Form A and focused repair; allow more time if foundational gaps remain

The four-week route assumes substantial prior knowledge. It is not a shortcut through all beginner instruction. If your test date leaves insufficient time, investigate your program's scheduling options rather than treating a compressed plan as proof of readiness.

A reusable study session

1. Retrieve one earlier idea without opening the book. For example, explain why a percent decrease uses a particular base.
2. Study one manageable section. Follow a worked example, predicting the next step before reading it.
3. Complete a partly finished example, then attempt a fresh question without help.
4. Compare reasoning as well as the final answer. Record the exact point where your reasoning changed.
5. Schedule a later check. "Tomorrow, later this week, and next week" is an adjustable starting pattern, not a guaranteed optimal interval.

Mix subjects after building enough foundation to recognize the relevant method. Switching topics before understanding the basic operations can create confusion rather than useful practice.