

5

Massachusetts

MCAS

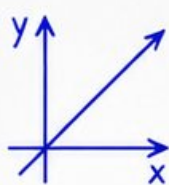
GRADE

7

MATH

PRACTICE TESTS

Standards Aligned
Problem Solving
For Comprehensive
Assessment Programs



$$y = mx + b$$

$$\frac{2}{3} + \frac{1}{6} = \frac{5}{6}$$



$$V = \pi r^2 h$$



5 PRINTED TESTS



2 ONLINE TESTS

USE THESE TWO
ADDITIONAL ONLINE
PRACTICE TESTS
FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.



Build
Confidence



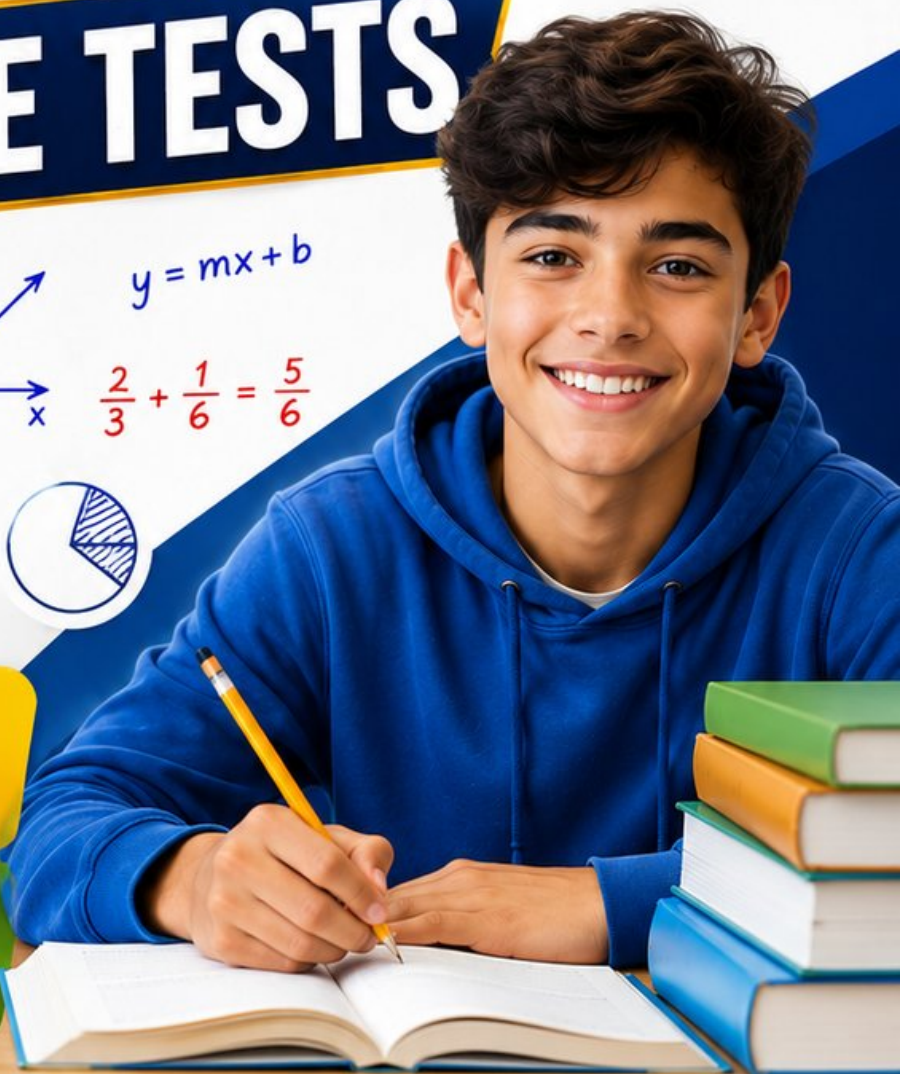
Strengthen
Math Skills



Detailed Answers
& Explanations

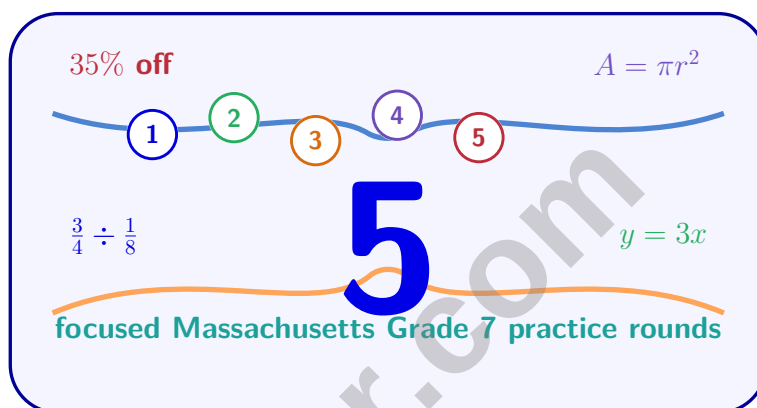


Improve Test
Performance



5 Massachusetts MCAS Grade 7 Math Practice Tests

Mixed Grade 7 Practice with Clear Keys and Explanation Support



Five complete 40-question Grade 7 MCAS practice rounds with proportional relationships, percents, rational numbers, expressions, equations, geometry, statistics, probability, answer keys, and clear explanations for every item.

Jay Daie and Reza Nazari



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Welcome, Massachusetts Grade 7 Problem Solver!

Five focused rounds for sharper MCAS math thinking

This book gives you five full Grade 7 MCAS math practice tests. Each round is built to help you notice structure, compare quantities, use proportional reasoning, handle rational numbers, and explain your thinking with care.

Your Massachusetts Practice Promise

I will read every question carefully, choose a strategy that fits, write enough work to prove my answer, and use corrections as training for the next test.

Read

Model

Verify

How to Use This Book

A five-session plan for confident Grade 7 review

1. **Warm up with the review pages.** Notice the big ideas before starting the tests.
2. **Complete one test at a time.** Treat each 40-question round like a real practice session.
3. **Show your reasoning.** Jot a proportion, equation, diagram, number line, or quick estimate when it helps.
4. **Correct actively.** Rework missed items before reading the explanation.
5. **Choose the next target.** After each test, name one skill and one habit to improve.

Massachusetts review rhythm: Work a test, score it, study your misses, then come back ready for the next round with one clear goal.



What Is Inside?

Five MCAS tests, 200 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Proportional relationships, unit rates, percents, rational-number operations, and careful reading.
Tests 3–5	Expressions, equations, inequalities, scale drawings, geometry, data, probability, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

The tests are mixed on purpose. Grade 7 success means recognizing which idea is being tested even when the next question changes format.



Scan me!
For more practice
& answers

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1) Which value is NOT a valid probability?

☐ A. 0

☐ B. 0.5

☐ C. 1

☐ D. 1.01

2) Evaluate: $-1 - (-5)$

☐ A. -6

☐ B. 6

☐ C. -4

☐ D. 4

3) Which expression equals $9x - 2y + 3x + 5y$?

☐ A. $12x + 3y$

☐ B. $12x + 7y$

☐ C. $6x + 3y$

☐ D. $12xy$

4) A restaurant surveyed 450 customers about their favorite dish. The circle graph shows pasta is 32%, chicken is 28%, fish is 22%, and vegetarian is 18%. How many customers prefer pasta?

☐ A. 32

☐ B. 99

☐ C. 144

☐ D. 288

5) An architect uses a scale of 1 inch = 15 feet for a floor plan. If a hallway is actually 45 feet long, what was the error if someone calculated it as 2 inches instead of the correct answer?

☐ A. No error; 2 inches is correct

☐ B. Forgetting to convert units

☐ C. Adding instead of multiplying

☐ D. Using the scale 15 : 1 instead of 1 : 15



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6) A clothing store buys jeans for \$55 and wants a 40% profit margin (markup). If they then apply an additional 8% sales tax, what do customers pay?

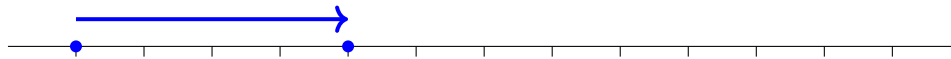
☐ A. \$88

☐ C. \$83.07

☐ B. \$77

☐ D. \$83.16

7) A student computed $-7 + 4$ and got -11 . What error did the student make?



Correct: start at -7 , move 4 right to -3

☐ A. Added the absolute values instead of subtracting them

☐ C. Subtracted in the wrong order of subtracting them

☐ B. Flipped the signs

☐ D. Forgot to use a number line

8) Two hikers' speeds are shown below. Who hikes faster?

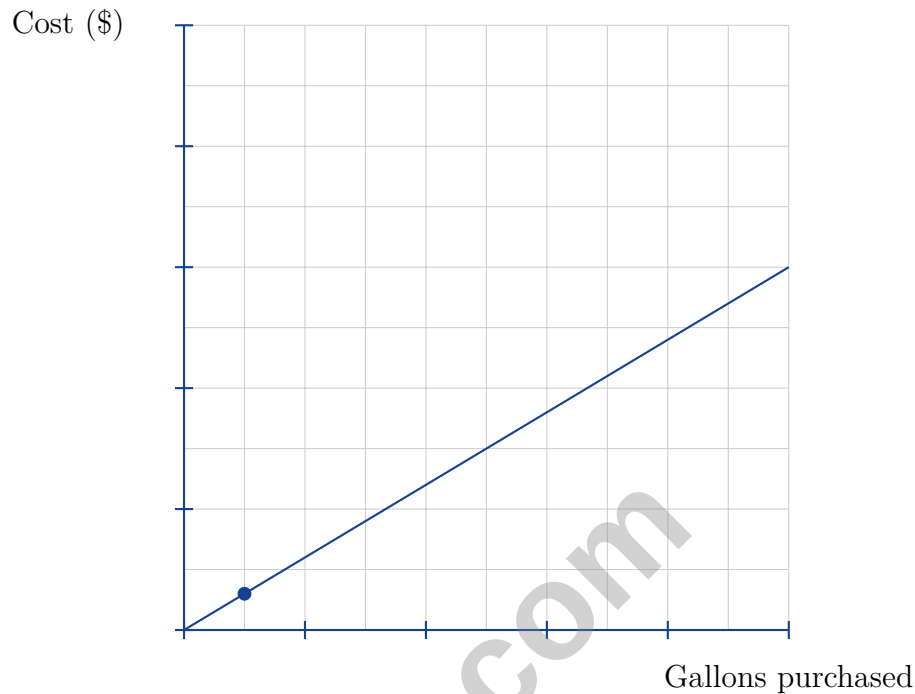
Hiker	Distance	Time
Maya	$\frac{7}{8}$ mi	$\frac{1}{4}$ hr
Alex	$\frac{5}{6}$ mi	$\frac{1}{3}$ hr

☐ A. Maya at $\frac{1}{6}$ mph

☐ C. They hike at the same speed

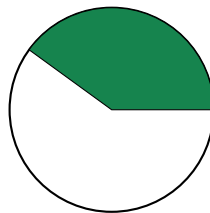
☐ B. Alex at $\frac{5}{2}$ mph

☐ D. Maya at $\frac{7}{2}$ mph

The graph shows the cost of gasoline purchased. What is the price per gallon?

- ☐ A. \$10.00 per gallon ☐ C. \$6.00 per gallon
☐ B. \$1.00 per gallon ☐ D. \$0.60 per gallon



10)

Convert 40% to a decimal.

- ☐ A. 0.04 ☐ C. 4.0
☐ B. 40 ☐ D. 0.4



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- 1) If a runner covers 6 kilometers in $\frac{1}{2}$ hour, how many kilometers does the runner cover in 2 hours at the same speed?
- ☐ A. 12 km ☐ C. 30 km
☐ B. 18 km ☐ D. 24 km
- 2) A graph shows the line passing through points (0, 0) and (2, 8). What is the constant of proportionality?
- ☐ A. $k = 2$ ☐ C. $k = 8$
☐ B. $k = 6$ ☐ D. $k = 4$
- 3) A car's fuel consumption is 25 miles per gallon. If the relationship is expressed as $d = kg$ where d is distance (miles) and g is gallons used, what is the constant of proportionality?
- ☐ A. $k = 50$ miles per half-gallon ☐ C. $k = 0.04$
☐ B. $k = \frac{1}{25}$ gallons per mile ☐ D. $k = 25$ miles per gallon
- 4) A rectangular prism has length 12 in, width 6 in, and height 5 in. Find the surface area.
- ☐ A. 360 in^2 ☐ C. 258 in^2
☐ B. 324 in^2 ☐ D. 180 in^2
- 5) A simulation uses a spinner with two equal sections to model guessing on a multiple-choice question with four choices. Is this a good model?
- ☐ A. Yes, because both have equally likely outcomes ☐ C. No, because the probabilities do not match
☐ B. Yes, because the spinner is easy to use ☐ D. No, because you cannot use a spinner twice



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- 6) Which inequality represents “a number plus 8 is less than 15”?
- ☐ A. $x + 8 < 15$ ☐ C. $x - 8 < 15$
☐ B. $x + 8 > 15$ ☐ D. $8x < 15$
- 7) A rectangular room area is 2.5 m by 3 m. A scale drawing uses 1 cm : 0.5 m. What is the area of the scale drawing in square centimeters?
- ☐ A. 30 cm² ☐ C. 75 cm²
☐ B. 60 cm² ☐ D. 120 cm²
- 8) If point $P(1, -3)$ is reflected over the line $y = x$, and then the image is reflected over the x -axis, where does it end up?
- ☐ A. $(1, -3)$ ☐ C. $(3, 1)$
☐ B. $(-3, -1)$ ☐ D. $(-3, 1)$
- 9) A circle has circumference $\frac{44}{7}$ cm. Using $\pi \approx \frac{22}{7}$, what is its diameter?
- ☐ A. 4 cm ☐ C. 2 cm
☐ B. 3 cm ☐ D. 1 cm
- 10) A school wants to estimate the average amount of time students spend on homework per night. Which sample size is best?
- ☐ A. 10 students ☐ C. 100 students
☐ B. 25 students ☐ D. 1000 students



h_1	$8x$	12
h_2	16	24
	w_1	w_2

1)

An area model has four rectangular sections with areas $8x$, 12 , 16 , and 24 . What is the GCF of all four terms?

☐ A. 2☐ C. 8☐ B. 4☐ D. 122) What is $-\frac{3}{5} + \frac{4}{5}$?☐ A. $-\frac{7}{5}$ ☐ C. $\frac{3}{5}$ ☐ B. $\frac{1}{5}$ ☐ D. $-\frac{1}{5}$

3) A climber ascends 150 feet then descends 210 feet. What is the net change in elevation?

☐ A. -360 ft☐ C. 60 ft☐ B. -60 ft☐ D. 360 ft4) Evaluate $-2x + 5$ when $x = -3$.☐ A. 11☐ C. 1☐ B. -1 ☐ D. -6 

- 5) A floor plan shows a rectangular office that is 2.5 inches by 3.5 inches at a scale of 1 in : 10 ft. Which pair of measurements are the actual office dimensions?
- ☐ A. 25 ft by 35 ft ☐ C. 12.5 ft by 17.5 ft
- ☐ B. 2.5 ft by 3.5 ft ☐ D. 20 ft by 28 ft
- 6) What is $2\frac{2}{5} \div \frac{4}{5}$?
- ☐ A. $2\frac{2}{5}$ ☐ C. $3\frac{1}{8}$
- ☐ B. 3 ☐ D. $6\frac{1}{10}$
- 7) Which fraction converts to $0.\overline{1}$ (where 1 repeats)?
- ☐ A. $\frac{1}{9}$ ☐ C. $\frac{1}{11}$
- ☐ B. $\frac{1}{10}$ ☐ D. $\frac{1}{8}$
- 8) If a number in standard form is 0.000000125, what is the value of the exponent when written in scientific notation?
- ☐ A. -7 ☐ C. -9
- ☐ B. -8 ☐ D. -10
- 9) A pair of jeans costs \$80. After a 20% discount, express the final price in factored form.
- ☐ A. $80(1 - 0.2)$ ☐ C. $0.8(80)$
- ☐ B. $80(0.2)$ ☐ D. 80×20



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Massachusetts MCAS Grade 7 Practice Test Answer Keys**How to use this section with a Grade 7 student:**

1. check the answer first and circle any item that needs another look
2. retry the problem with fresh work before reading the explanation
3. write one short lesson learned from each missed or guessed item

A strong review routine turns every correction into a sharper plan for the next Massachusetts MCAS practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice D is correct.** (7.SP.5-7.SP.8) Probability must be between 0 and 1 (inclusive). $1.01 > 1$, so it is invalid.
- 2) **Choice D is correct.** (7.NS.1-7.NS.3) $-1 - (-5) = -1 + 5 = 4$. Move right 5 units from -1 on the number line.
- 3) **Choice A is correct.** (7.EE.1) Combine: $(9 + 3)x + (-2 + 5)y = 12x + 3y$.
- 4) **Choice C is correct.** (7.SP.1-7.SP.4) 32% of $450 = 0.32 \times 450 = 144$ customers.
- 5) **Choice D is correct.** (7.RP.1-7.RP.3) Correct: $45 \div 15 = 3$ inches. If someone got 2 inches, they likely flipped the ratio: $45 \div (15 \times 2) \approx 1.5$ or used 15 in numerator.
- 6) **Choice D is correct.** (7.RP.3) Markup: $55 \times 1.40 = \$77$. Tax on $\$77$: $0.08 \times 77 = \$6.16$. Total: $77 + 6.16 = \$83.16$.
- 7) **Choice A is correct.** (7.NS.1b) The student added $|-7| + |4| = 7 + 4 = 11$ and kept the negative sign. For opposite signs, subtract: $|-7| - |4| = 7 - 4 = 3$, so the correct answer is -3 .
- 8) **Choice D is correct.** (7.RP.1-7.RP.3) Maya: $\frac{7/8}{1/4} = \frac{7}{8} \times 4 = \frac{7}{2} = 3.5$ mph. Alex: $\frac{5/6}{1/3} = \frac{5}{6} \times 3 = \frac{5}{2} = 2.5$ mph. Maya is faster.
- 9) **Choice D is correct.** (7.RP.1-7.RP.3) The unit-rate point is $(1, 0.6)$, indicating $\$0.60$ per gallon.
- 10) **Choice D is correct.** (7.RP.3) Using the proportion $\frac{40}{100} = \frac{d}{1}$ where d is the decimal, divide: $\frac{40}{100} = 0.4$.
- 11) **The correct answer is 0.75.** (7.RP.1-7.RP.3) Revenue is price per cup times cups sold, so the constant is 0.75.
- 12) **Choice C is correct.** (7.NS.1-7.NS.3) Add in order: First, $-1.5 + 3.2 = 1.7$. Then, $1.7 + (-0.8) = 1.7 - 0.8 = 0.9$ points.
- 13) **Choice A is correct.** (7.NS.1-7.NS.3) Multiply: $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$ cup.
- 14) **Choice C is correct.** (7.EE.1-7.EE.2) Pattern: when $x = 1$, $y = 5$; when $x = 2$, $y = 8$; when $x = 3$, $y = 11$. Each increase of 1 in x adds 3 to y . Check: $3(1) + 2 = 5$ ✓.
- 15) **Choice D is correct.** (7.RP.1-7.RP.3) Each ratio: $25/10 = 2.5$, $50/20 = 2.5$, $75/30 = 2.5$. The constant ratio is $\$2.50$ per ticket.
- 16) **Choice C is correct.** (7.RP.3) Available = $\$3,600 - \$1,200 - \$400 - \$300 - \$200 = \$1,500$.
- 17) **Choice B is correct.** (7.NS.1-7.NS.3) $m = (-7) \times (-4) = 28$.
- 18) **The correct answer is A,D.** (7.RP.1-7.RP.3) Options A and D are the two correct answers. A is true because $y = kx = 2x$ is the equation for any proportional relationship with $k = 2$. D is true because substituting $x = 2$ into $y = 2x$ gives $y = 4$. All other options are false.
- 19) **Choice D is correct.** (7.NS.2d) Divide $23 \div 40 = 0.575$. Since $40 = 2^3 \times 5$, it terminates in three decimal places.
- 20) **Choice A is correct.** (7.NS.1-7.NS.3) Average = $\frac{450+520+485}{3} = \frac{1455}{3} = 485$ calories.
- 21) **The correct answer is \$90.** (7.RP.3) If $18 = 0.20 \times b$, then $b = \frac{18}{0.20} = 90$ dollars.
- 22) **Choice B is correct.** (7.NS.1-7.NS.3) In proper scientific notation, the coefficient must satisfy $1 \leq a < 10$. $0.0000625 = 6.25 \times 10^{-5}$.
- 23) **Choice A is correct.** (7.NS.1-7.NS.3) Statement A is correct: $4 \times 4 = 16$ and $\sqrt{16} = 4$ (principal square root is positive). Statement B is false: $\sqrt{25} = 5$, not -5 (the square root symbol yields only the positive root). Statement C is false: $6^2 = 36$, not 37. Statement D is true but only A is the correct answer for this single-answer MC.
- 24) **Choice A is correct.** (7.SP.5-7.SP.8) Since $P(\text{Win}) + P(\text{Lose}) = 1$, we have $P(\text{Lose}) = 1 - 0.75 = 0.25$. (Negative probabilities are undefined.)
- 25) **Choice A is correct.** (7.NS.2) Multiplication is commutative. $7 \times (-2) = -14$ and $(-2) \times 7 = -14$.
- 26) **Choice A is correct.** (7.SP.3) Predictability requires tight clustering. Town A concentrates at 4–8 inches (range 8). Town B spreads 0–14 inches (range 14), making individual snowfall unpredictable.
- 27) **The correct answer is \$81.** (7.RP.3) $I = 600 \times 0.045 \times 3 = \81 .
- 28) **Choice D is correct.** (7.RP.3) Commission = commission rate $\times$ sales. Since $8000 = 0.02 \times \text{sales}$, $\text{sales} = 8000 \div 0.02 = \$400,000$.
- 29) **Choice B is correct.** (7.SP.1-7.SP.4) With 7 values, the median is at position $\frac{7+1}{2} = 4$. The 4th value is 24.



Hi, Persistent Problem Solver!

◇ Some Grade 7 questions ask you to hold several ideas in your mind at once. That can feel hard, and that is exactly why practice matters. ◇

★ **Remember this:** You showed persistence by continuing through the set. That habit is powerful because difficult problems often open after one more good attempt. You practiced across 5 full Grade 7 practice tests, and that repeated effort matters. ★

Persistence Tools

- **Try a Smaller Case:** Use an easier number to see the pattern.
- **Draw It:** Make the situation visible.
- **Restate It:** Say the question in your own words.
- **Check One Step:** Fix the first unclear place.

Grade 7 test-day tip: When stuck, do not restart everything. Find the first step you trust, then rebuild from there.

If you want to share something or ask a question, please email me at jay@testinar.com.

Jay Daie

Your Persistence Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **5** full-length Math practice tests and **2** online tests to help Grade 7 students build confidence, strengthen skills, and excel on standardized assessments.

Each practice test is carefully crafted to reflect the latest standards and includes a variety of question types, realistic test conditions, and detailed answer explanations.

Perfect for classroom use, homework, test preparation, and extra practice at home.



THIS BOOK INCLUDES:

5 Full-Length Printed Tests

2 Online Practice Tests

 Detailed Answers & Explanations



MORE PRACTICE. GREATER RESULTS.

Give your child the tools to build strong math skills, confidence, and a positive attitude toward learning.

WHAT YOU'LL GAIN



Build Confidence

Practice regularly to feel prepared and test-ready.



Strengthen Math Skills

Develop key math concepts and problem solving abilities.



Improve Understanding

Learn with clear explanations and step-by-step solutions.



Test Confidence

Familiarize with test formats and improve accuracy and speed.



Boost Performance

Apply your knowledge and achieve your best score!

TOPICS COVERED

- ✓ Ratios & Proportions
- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Geometry
- ✓ Percents & Decimals
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement & Conversions
- ✓ Algebraic Thinking
- ✓ And More!



2 ONLINE TESTS

Use these two additional online practice tests for extra review after the printed tests in this book.



2 EXTRA ONLINE TEST ACCESS CODE IS INSIDE THE BOOK!

Don't lose it—your extra practice and success start here!



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