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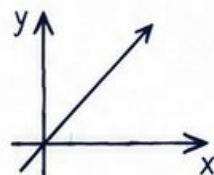
Vermont VTCAP

GRADE
7
MATH

PRACTICE TESTS

Standards Aligned
Problem Solving
For Comprehensive
Assessment Programs

$$y = mx + b$$



$$\frac{2x}{3} + \frac{x}{6} = 2$$



$$V = \frac{1}{3} \pi r^2 h$$

**4 PRINTED TESTS****2 ONLINE TESTS**

USE THESE TWO
ADDITIONAL ONLINE
PRACTICE TESTS

FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.



Build
Confidence



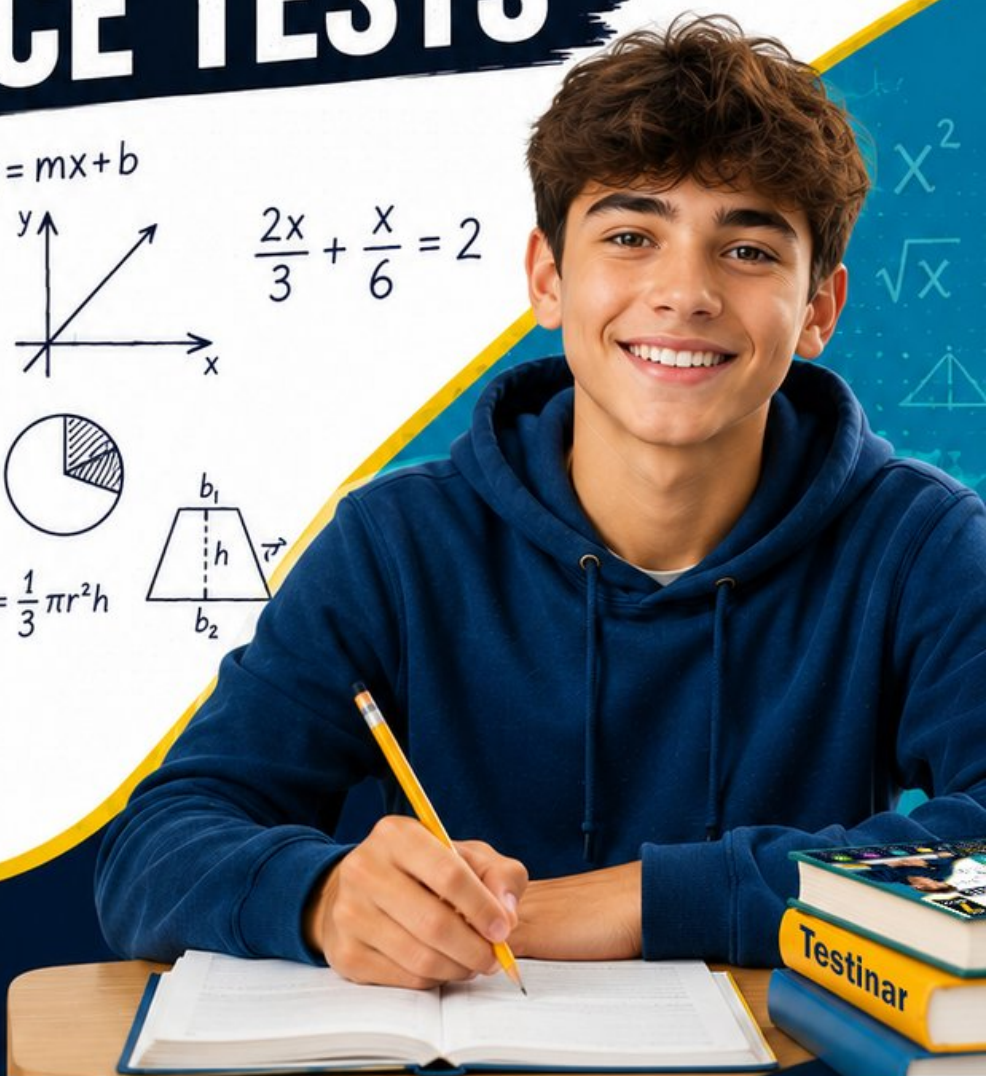
Strengthen
Math Skills



Detailed Answers
& Explanations

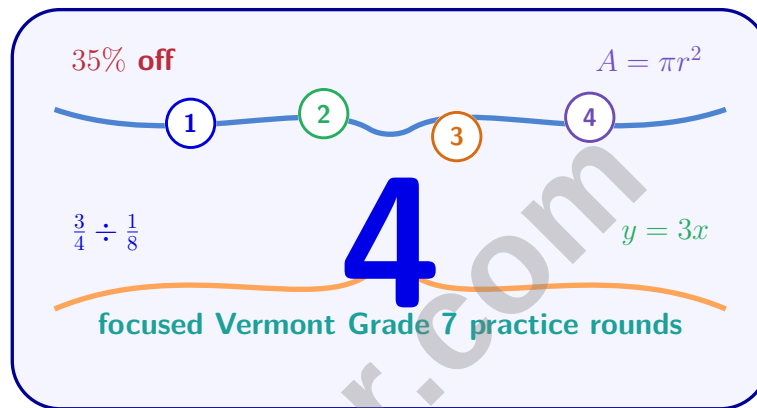


Improve Test
Performance



4 Vermont VTCAP Grade 7 Math Practice Tests

Four Standards-Based VTCAP Rounds with Clear Explanations



Four complete 40-question Grade 7 VTCAP 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, Vermont Grade 7 Problem Solver!

Four focused rounds for sharper VTCAP math thinking

This book gives you four full Grade 7 VTCAP 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 Vermont 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 four-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.

Vermont 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?

Four VTCAP tests, 160 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 3–4	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.



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For more practice
& answers

Table of Contents

★ Practice Test 1	_____	15
★ Practice Test 2	_____	30
★ Practice Test 3	_____	44
★ Practice Test 4	_____	60
Practice Test Answer Keys	_____	75
Practice Test Answers and Explanations	_____	78

1) A composite figure is made of a rectangle (8 ft by 5 ft) with a square (3 ft by 3 ft) attached to one side. What is the total area?

☐ A. 40 ft²

☐ C. 49 ft²

☐ B. 45 ft²

☐ D. 56 ft²

2) Which statement is FALSE about cylinders?

☐ A. Doubling the height doubles the volume

☐ C. Doubling both height and radius doubles the surface area

☐ B. Doubling the radius quadruples the volume

☐ D. The lateral area does not depend on the height of the cylinder

3) A sports league compares two seasons' scoring:

Season	Q1	Q3	Median
Season 1	60	85	72
Season 2	65	88	76

Which season shows overall improvement?

☐ A. Season 1 (lower scores are better for defense)

☐ C. Both seasons are identical

☐ B. Season 2 (higher median, Q1, and Q3)

☐ D. Cannot determine without the means

4) A dot plot shows the number of goals scored by soccer players: 2 (two players), 3 (three players), 4 (four players), 5 (two players), 6 (one player). What is the mean number of goals?

☐ A. 3.5 goals

☐ C. 4 goals

☐ B. 3.8 goals

☐ D. 5.5 goals



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- 5) A jar contains 18 marbles: 6 red, 5 blue, 4 green, and 3 yellow. A marble is drawn at random. What is the probability of drawing a green marble?

☐ A. $\frac{4}{18}$
☐ B. $\frac{3}{9}$

☐ C. $\frac{1}{5}$
☐ D. $\frac{4}{14}$

- 6) A fair six-sided die is rolled twice. What is the probability of rolling a 3 on the first roll AND a 5 on the second roll?

☐ A. $\frac{1}{6}$
☐ B. $\frac{1}{12}$

☐ C. $\frac{1}{36}$
☐ D. $\frac{1}{18}$

- 7) Two box plots compare the number of online orders per day for two e-commerce sites. Site X: $Q1 = 50$, Median = 75, $Q3 = 100$. Site Y: $Q1 = 40$, Median = 75, $Q3 = 110$. Which site has more consistent order volume?

☐ A. Site X (lower IQR: 50 vs. 70)

☐ C. Both sites are identical

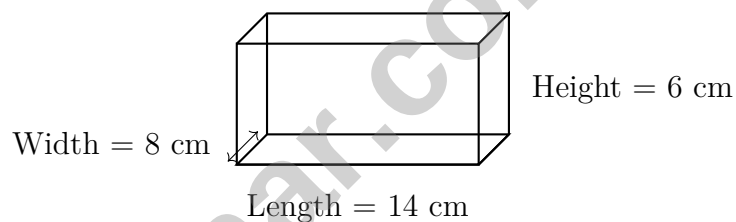
☐ B. Site Y (higher $Q3$ means more orders)

☐ D. Site Y (lower $Q1$ means better baseline)

- 8) On a number line, if the point -12 is 12 units from zero, how many units from zero is the point 12?



- 9) A test for a new medicine was conducted on 1000 patients. 850 patients showed improvement. What is the experimental probability that a patient will show improvement?
- ☐ A. 0.15 ☐ C. 1.18
☐ B. 0.85 ☐ D. 1.76
- 10) An error in a dataset is corrected: 28 is removed and 82 is added. Comparing the old and new stem-and-leaf plots, which measure of central tendency is most likely to change?
- ☐ A. Mode ☐ C. Mean
☐ B. Median ☐ D. Range



- 11) A rectangular prism has the dimensions shown. What is its volume?
- ☐ A. 28 cm^3 ☐ C. 504 cm^3
☐ B. 224 cm^3 ☐ D. 672 cm^3



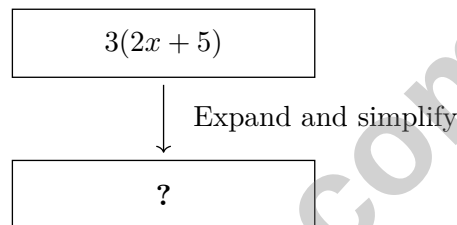
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1) A river is 50 meters wide. On a map with scale 1 cm : 10 m, how wide does the river appear?

- ☐ A. 0.5 cm ☐ C. 50 cm
☐ B. 500 cm ☐ D. 5 cm

2) Between which two consecutive integers does $\sqrt{200}$ lie?

- ☐ A. between 12 and 13 ☐ C. between 14 and 15
☐ B. between 13 and 14 ☐ D. between 15 and 16



3)

What expression goes in the box marked ??

- ☐ A. $3 + 2x + 5$ ☐ C. $5x + 8$
☐ B. $6x + 15$ ☐ D. $2x + 5 + 3$

4) Temperature drops 2 degrees per hour for 6 hours. What is the total change?

- ☐ A. 4 degrees ☐ C. -12 degrees
☐ B. -4 degrees ☐ D. 12 degrees

5) A student is making a scale model. The scale is 1 inch = 4 feet. The actual length is 16 feet. The student finds the model length by multiplying: $16 \times 4 = 64$ inches. Is this correct?

- ☐ A. Yes, the calculation is correct ☐ C. No; the correct answer is 2 inches
☐ B. No; the correct answer is 8 inches ☐ D. No; the correct answer is 4 inches



6) A stock loses 15 points. Express this as a signed number.

- ☐ A. -15 (correct; loss is negative) ☐ C. 15 (ignores the loss/negative direction)
☐ B. 0 (no change) ☐ D. -30 (double the loss)

7) Which expression represents “the sum of 6 and twice a number t ”?

- ☐ A. $6 + 2t$ ☐ C. $6(2 + t)$
☐ B. $2(6 + t)$ ☐ D. $6 + t^2$

8) Which group shows ALL the like terms in the expression $5a + 3b + 7a + 2c + 8b$?

- ☐ A. $3b$ and $8b$ ☐ C. $5a$ and $7a$
☐ B. $2c$ and $5a$ ☐ D. $5a$, $7a$, $3b$, and $8b$

9) What is the GCF of $14p$ and 21 ?

- ☐ A. 7 ☐ C. 21
☐ B. 14 ☐ D. 42

10) Solve and identify the key step: $-5x \geq 20$

Original: $-5x \geq 20$

Divide both sides by -5 .

FLIP the inequality: $\geq$ becomes $\leq$

Result: $x \leq -4$

- ☐ A. $x \leq -4$ ☐ C. $x < 4$
☐ B. $x \geq -4$ ☐ D. $x = -4$



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1) Which of these fractions will produce a **terminating** decimal?

☐ A. $\frac{1}{7}$

☐ B. $\frac{3}{9}$

☐ C. $\frac{11}{100}$

☐ D. $\frac{4}{21}$

2) A refrigerator is set to maintain a temperature of -2°C . It drops $\frac{1}{4}^{\circ}\text{C}$ per hour. What will the temperature be after 8 hours?

3) Two histograms compare the quiz scores of morning and afternoon classes. The morning class shows bars centered around 85–90, while the afternoon class shows bars centered around 75–80. What does this suggest?

☐ A. Morning students scored higher on average

☐ B. Afternoon students are smarter

☐ C. Both classes performed equally well

☐ D. Quiz difficulty was higher for morning students

4) A rectangular piece of fabric (25 inches $\times$ 16 inches) has two identical right triangles (5 inches $\times$ 4 inches) removed from opposite corners. What is the remaining area?

☐ A. 360 in^2

☐ B. 380 in^2

☐ C. 400 in^2

☐ D. 420 in^2

5) Convert 5,000 cubic inches to cubic feet. (Hint: $1\text{ ft} = 12\text{ in}$, so $1\text{ ft}^3 = 1,728\text{ in}^3$)

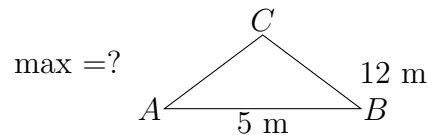
☐ A. 2.89 ft^3

☐ B. 3.25 ft^3

☐ C. 3.68 ft^3

☐ D. $8,640\text{ ft}^3$





6)

Greta wants to draw a triangle with sides 5 m and 12 m. If the third side is a whole number of meters, what is the maximum possible length?

☐ A. 15 m

☐ C. 17 m

☐ B. 16 m

☐ D. 18 m

7) An arc is a portion of:

☐ A. The radius

☐ C. The circumference

☐ B. The diameter

☐ D. The sector
8) Which of the following is NOT a like term with $6xy$?
☐ A. $-4xy$
☐ C. $2xy^2$
☐ B. $9yx$
☐ D. $10xy$
9) Factor out the GCF from $10xy + 15y + 5$:
☐ A. $5(2xy + 3y + 1)$
☐ C. $10(xy + 1.5y + 0.5)$
☐ B. $5y(2x + 3 + \frac{1}{y})$
☐ D. $y(10x + 15 + 5y)$
10) Solve: $3x - 4 \leq 11$
☐ A. $x \geq 5$
☐ C. $x > 5$
☐ B. $x \leq 5$
☐ D. $x \leq 15$


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Vermont VTCAP 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 Vermont VTCAP practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** (7.G.4-7.G.6) Decompose into two shapes: Rectangle area = $8 \times 5 = 40 \text{ ft}^2$; square area = $3 \times 3 = 9 \text{ ft}^2$. Add the areas: $40 + 9 = 49 \text{ ft}^2$.
- 2) **Choice D is correct.** (7.G.4-7.G.6) A is true: Volume $\propto h$. B is true: $V \propto r^2$. C is true: $SA = 2\pi r^2 + 2\pi rh$ doubles when both r and h double (since both r^2 and rh double). D is false: Lateral area = $2\pi rh$ depends on both r and h .
- 3) **Choice B is correct.** (7.SP.1-7.SP.4) Season 2 has higher Q1 (65 vs. 60), median (76 vs. 72), and Q3 (88 vs. 85). The entire distribution shifted higher, with consistent spacing (IQR 23 for both), indicating uniform improvement.
- 4) **Choice B is correct.** (7.SP.1-7.SP.4) Sum = $2(2) + 3(3) + 4(4) + 5(2) + 6(1) = 4 + 9 + 16 + 10 + 6 = 45$. Count = 12. Mean = $\frac{45}{12} \approx 3.75 \approx 3.8$ goals.
- 5) **Choice A is correct.** (7.SP.5-7.SP.8) Green marbles: 4 out of 18. $P(\text{green}) = \frac{4}{18} = \frac{2}{9}$.
- 6) **Choice C is correct.** (7.SP.5-7.SP.8) $P(3) \cdot P(5) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$ for independent events.
- 7) **Choice A is correct.** (7.SP.3) Site X's IQR = $100 - 50 = 50$; Site Y's IQR = $110 - 40 = 70$. Smaller IQR indicates tighter middle-50% spread, so Site X is more consistent.
- 8) **The correct answer is 12.** (7.NS.1-7.NS.3) Both -12 and 12 are the same distance from zero, which is 12 units. They are opposites.
- 9) **Choice B is correct.** (7.SP.6) Experimental probability = $\frac{850}{1000} = 0.85$.
- 10) **Choice C is correct.** (7.SP.1-7.SP.4) Removing 28 and adding 82 (a larger value) changes the sum significantly, affecting the mean. Median and mode may not change if the dataset is large enough.
- 11) **Choice D is correct.** (7.G.4-7.G.6) $V = l \times w \times h = 14 \times 8 \times 6 = 672 \text{ cm}^3$.
- 12) **Choice A is correct.** (7.G.1-7.G.5) When two angles and the side between them are given, the triangle is uniquely determined. The third angle is $180^\circ - 71^\circ - 72^\circ = 37^\circ$.
- 13) **Choice B is correct.** (7.G.1-7.G.5) Two sides ($ST = 7 \text{ cm}$ and $TU = 6 \text{ cm}$) and the included angle (at $T = 52^\circ$) are known. This is the SAS (Side-Angle-Side) condition.
- 14) **Choice A is correct.** (7.G.4-7.G.6) The correct radius is $10 \div 2 = 5 \text{ cm}$. The student incorrectly multiplied: $10 \times 2 = 20 \text{ cm}$.
- 15) **Choice A is correct.** (7.SP.5-7.SP.8) An event and its complement sum to 1. Here, $\frac{2}{3} + \frac{1}{3} = \frac{3}{3} = 1$, so both probabilities are correct.
- 16) **Choice B is correct.** (7.SP.1-7.SP.4) Sample proportion: 60% or 0.60. Apply to population: $0.60 \times 10000 = 6000$ customers.
- 17) **Choice B is correct.** (7.NS.1-7.NS.3) The key principle (7.NS.1c): $a - (-b) = a + b$. This works because we are undoing a debt or reversing a loss. Choice B correctly identifies this conceptual principle.
- 18) **Choice C is correct.** (7.SP.1-7.SP.4) 46% of 4500 = $0.46 \times 4500 = 2070$ transactions.
- 19) **Choice D is correct.** (7.RP.1-7.RP.3) $150 \text{ m} = 15000 \text{ cm}$. Divide by scale: $15000 \div 500 = 30 \text{ cm}$.
- 20) **The correct answer is -30 .** (7.NS.2) Change per minute is -7.5 meters. After 4 minutes: $(-7.5) \times 4 = -30$ meters.
- 21) **The correct answer is B,C.** (7.RP.1-7.RP.3) Option B: cost = $1.50 \times$ pounds (proportional, of form $y = kx$). Option C: distance = speed $\times$ time (proportional). Option A is a general trend but not a strict proportional relationship. Option D: height does not scale proportionally with age (growth rates vary).
- 22) **Choice C is correct.** (7.RP.3) $\frac{16}{40} = \frac{2}{5} = 0.40 = 40\%$.
- 23) **Choice D is correct.** (7.RP.1-7.RP.3) Convert $3\frac{1}{2} = \frac{7}{2}$. Unit rate = $\frac{7/2}{1/4} = \frac{7}{2} \times 4 = 14 \text{ mph}$.
- 24) **Choice D is correct.** (7.RP.1-7.RP.3) Substitute into $y = -2x$: when $x = 1$, $y = -2(1) = -2$. Point $(1, -2)$ is on the line.
- 25) **Choice B is correct.** (7.RP.1-7.RP.3) Table B has constant ratio: $\frac{6}{2} = 3$, $\frac{12}{4} = 3$, $\frac{18}{6} = 3$. Table A is not proportional ($\frac{3}{1} = 3$ but $\frac{7}{3} \neq 3$).
- 26) **Choice D is correct.** (7.RP.1-7.RP.3) For $y = 4x$: when $x = 1$, $y = 4 \times 1 = 4$. So $(1, 4)$ lies on the line. This is the unit-rate point where the constant of proportionality $k = 4$ is visually represented. The other points do not satisfy $y = 4x$.



Hi, Smart Reviewer!

◇ The best learning often happens after the test, when you look back and notice what worked and what needs attention. This carefully paced book gave you four steady Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

★ **Remember this:** You can use these practice tests as a map. The questions you solved quickly show strengths; the questions you missed show where to train next. ★

Review Routine

- **Sort:** Group mistakes by skill.
- **Reread:** Check whether the question was misunderstood.
- **Resolve:** Do the problem again without looking.
- **Record:** Write the lesson in one sentence.

Grade 7 test-day tip: Review in short focused sessions. Ten careful minutes can be more useful than an hour of rushing.

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

Jay Daie

Your Review Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **4** 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:

4 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!

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