

6 Rhode Island RICAS

GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving For
Comprehensive Assessment Programs



6 PRINTED
TESTS



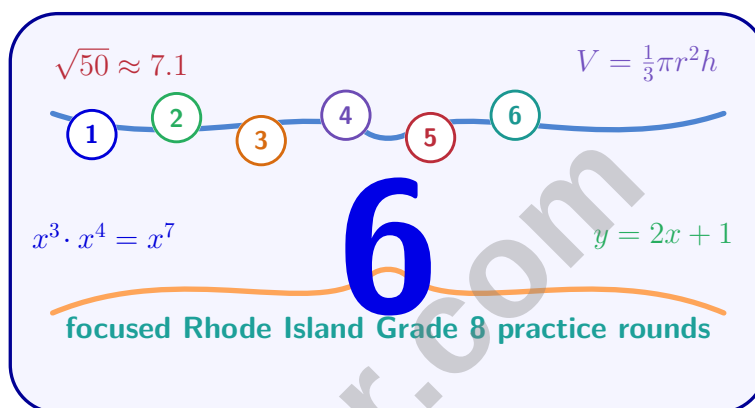
2 ONLINE
TESTS



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

6 Rhode Island RICAS Grade 8 Math Practice Tests

Complete Grade 8 Practice Rounds with Keys and Step-by-Step Explanations



Six complete 40-question Grade 8 RICAS practice rounds with real numbers, exponents, scientific notation, equations, functions, transformations, geometry, data analysis, probability, answer keys, and clear explanations for every item.

Jay Daie and Reza Nazari



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Welcome, Rhode Island Grade 8 Problem Solver!

Six focused rounds for sharper RICAS math thinking

This book gives you six full Grade 8 RICAS math practice tests. Each round is built to help you recognize structure, reason with real numbers and exponents, analyze linear relationships, connect equations with graphs, and explain your thinking with care.

Your Rhode Island 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 six-session plan for confident Grade 8 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 an exponent rule, equation, graph, transformation, diagram, 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.

Rhode Island 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?

Six RICAS tests, 240 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 4–6	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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- 1) A student earns \$15 per hour. Which table represents this relationship?

Hours	1	2	3
Earnings (\$)	15	30	45

What is the slope?

- ☐ A. 15
- ☐ B. $\frac{1}{15}$
- ☐ C. 30
- ☐ D. $\frac{15}{30}$
- 2) Which value is irrational?
- ☐ A. $0.5 + 0.25$
- ☐ B. $\frac{1}{2} + \frac{1}{3}$
- ☐ C. $\sqrt{10} + 1$
- ☐ D. 2^2
- 3) To the nearest hundredth, $\sqrt{19} \approx$?
- ☐ A. 4.35
- ☐ B. 4.38
- ☐ C. 4.37
- ☐ D. 4.36
- 4) Which is the best estimate of $3\sqrt{5}$?
- ☐ A. 4.5
- ☐ B. 6.0
- ☐ C. 6.7
- ☐ D. 9.8
- 5) A student loan of \$10,000 at 5% compound interest grows for 4 years. Approximately how much will be owed?
- ☐ A. \$10,500
- ☐ B. \$11,500
- ☐ C. \$12,155
- ☐ D. \$13,000



- 6) Two trend-line slopes are 1.2 and 1.1. What is their difference?

- 7) Complete the table by applying exponent laws:

Start	Law	Result
$3^5 \cdot 3^2$	Add exponents	$3^?$

What is the exponent in the result?

- ☐ A. 3 ☐ C. 15
☐ B. 10 ☐ D. 7

- 8) If $x^3 = 27$, what is x ?

- ☐ A. 2 ☐ C. 4
☐ B. 5 ☐ D. 3

- 9) Express 120,000,000 in scientific notation.

- ☐ A. 1.2×10^7 ☐ C. 1.2×10^9
☐ B. 12×10^7 ☐ D. 1.2×10^8

- 10) $(2.1 \times 10^4) \times (3 \times 10^2) = ?$

- ☐ A. 5.1×10^6 ☐ C. 0.63×10^6
☐ B. 5.1×10^2 ☐ D. 6.3×10^6



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- 11) A student reads 25 pages of a book per day. How many days to read 200 pages?
(Proportional relationship.)

☐ A. 5 days

☐ C. 7 days

☐ B. 6 days

☐ D. 8 days

- 12) A data set has values $\{3, 7, 9, 11\}$ with mean 7.5. Find the Mean Absolute Deviation.

- 13) The area model below represents $(x + 2)(x + 4)$:

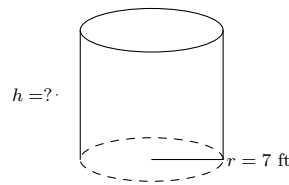
	x	2
x	x^2	$2x$
4	$4x$	8

What is the total area?

☐ A. $x^2 + 6x + 8$
☐ C. $x^2 + 4x + 2$
☐ B. $x^2 + 8$
☐ D. $2x^2 + 6x + 8$

- 14) Which equation is NONLINEAR?

☐ A. $y = 100 - 5x$
☐ C. $y = \frac{1}{x^2}$
☐ B. $y = \frac{1}{4}x$
☐ D. $y = 8x$

1)

A cylinder has radius 7 ft and volume 969.84 ft^3 . What is its height? (Use $\pi \approx 3.14$.)

☐ A. 6.3 ft☐ C. 10 ft☐ B. 8 ft☐ D. 12 ft

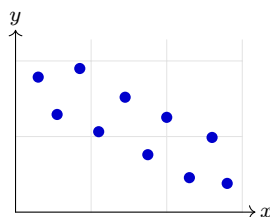
2) A model car is 12 cm long. The actual car is 4.8 m long. What is the scale factor from the model to the actual car?

☐ A. 40☐ C. 0.4☐ B. 4☐ D. 0.25

3) A regular pentagon has all sides equal and all angles equal. What is the measure of each interior angle?

☐ A. 120° ☐ C. 72° ☐ B. 100° ☐ D. 108° 

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4)

A researcher studies the relationship between screen time (hours/day) and grade point average (GPA 0–4.0) for high school students. The scatter plot shows weak negative correlation ($r = -0.35$) with substantial scatter. The researcher writes: **“The data show that screen time weakly causes lower GPAs.”** Which phrase in this statement is incorrect?

☐ A. *screen time*
☐ C. *weakly*
☐ B. *lower GPAs*
☐ D. *causes*

5) A food truck’s two-way table shows 500 orders:

	Dine-In	Takeout	Total
Vegetarian	75	125	200
Meat	100	200	300
Total	175	325	500

What is the marginal relative frequency for takeout orders?

☐ A. 0.35

☐ C. 0.60

☐ B. 0.50

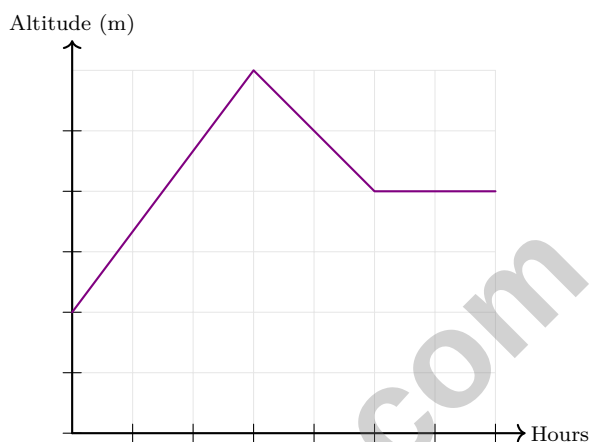
☐ D. 0.65
6) Consider the data: $\{3, 6, 9, 12\}$ (mean = 7.5). What is the MAD?
☐ A. 2

☐ C. 3.75

☐ B. 3

☐ D. 4.5


- 1) A translation moves a point from (a, b) to $(a + 5, b - 3)$. If another point moves from $(-2, 4)$ to some image point using the same translation, what is the image point?

☐ A. $(3, 1)$
☐ C. $(-7, 1)$
☐ B. $(3, 7)$
☐ D. $(-2, 1)$


2)

A hiker's altitude over 7 hours: rises $[0, 3]$, descends $[3, 5]$, plateaus $[5, 7]$. What is the altitude at hour 5?

☐ A. 1 meter

☐ C. 4 meters

☐ B. 3 meters

☐ D. 5 meters

- 3) A right triangle has legs of length 6 and 8. What is the length of the hypotenuse?

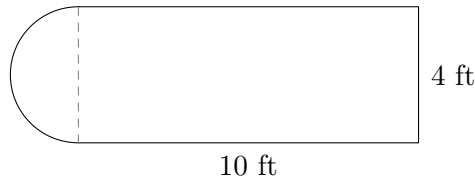
☐ A. 10

☐ C. 11

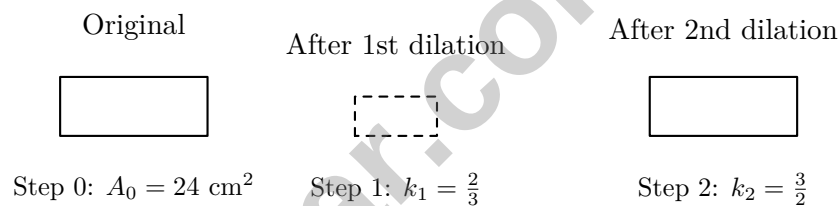
☐ B. 12

☐ D. 14


- 4) A composite figure is a rectangle (10 ft by 4 ft) with a semicircle attached on one end (diameter 4 ft). What is the total area? Use $\pi \approx 3.14$.



- ☐ A. 40 ft^2
☐ C. 52.56 ft^2
- ☐ B. 46.28 ft^2
☐ D. 58.84 ft^2
- 5) A rectangle undergoes two successive dilations: first by scale factor $\frac{2}{3}$, then by scale factor $\frac{3}{2}$. If the original rectangle has area 24 cm^2 , what is the final area?



- ☐ A. 24 cm^2
☐ C. 32 cm^2
- ☐ B. 16 cm^2
☐ D. 54 cm^2
- 6) A polygon has an interior angle sum of 2340° . How many sides does it have?
- ☐ A. 15
 ☐ C. 14
- ☐ B. 13
 ☐ D. 16



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Rhode Island RICAS Grade 8 Practice Test Answer Keys**How to use this section with a Grade 8 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 Rhode Island RICAS practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** (8.EE.B.5) Using points (1, 15) and (2, 30): slope = $\frac{30 - 15}{2 - 1} = \frac{15}{1} = 15$ dollars per hour.
- 2) **Choice C is correct.** (8.NS.A.1) The sum of an irrational number ($\sqrt{10}$) and a rational number (1) is always irrational. So $\sqrt{10} + 1$ is irrational. The others are rational: $0.5 + 0.25 = 0.75$, $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$, and $2^2 = 4$.
- 3) **Choice D is correct.** (8.NS.A.2) $4.35^2 = 18.9225$ and $4.36^2 = 19.0096$. Since 19 is closer to 19.0096, $\sqrt{19} \approx 4.36$.
- 4) **Choice C is correct.** (8.NS.A.2) $\sqrt{5} \approx 2.24$, so $3\sqrt{5} \approx 3 \times 2.24 = 6.72$.
- 5) **Choice C is correct.** (8.G.B.7) $A = 10000(1.05)^4 \approx 10000 \times 1.2155 = \$12,155$.
- 6) **The correct answer is 0.1.** (8.SP.A.2) Compute $1.2 - 1.1 = 0.1$.
- 7) **Choice D is correct.** (8.EE.A.1) Product rule: $3^5 \cdot 3^2 = 3^{5+2} = 3^7$.
- 8) **Choice D is correct.** (8.EE.A.2) $3 \times 3 \times 3 = 27$, so $\sqrt[3]{27} = 3$.
- 9) **Choice D is correct.** (8.EE.A.3) Move the decimal 8 places left to get 1.2; the exponent is 8.
- 10) **Choice D is correct.** (8.EE.A.4) Multiply coefficients: $2.1 \times 3 = 6.3$. Add exponents: $10^{4+2} = 10^6$. Result: 6.3×10^6 .
- 11) **Choice D is correct.** (8.EE.B.5) $y = 25x$. Solve $200 = 25x$: $x = 200/25 = 8$ days.
- 12) **The correct answer is 2.5.** (8.G.B.8) Absolute deviations: $|3 - 7.5| = 4.5$, $|7 - 7.5| = 0.5$, $|9 - 7.5| = 1.5$, $|11 - 7.5| = 3.5$. Sum = 10. MAD = $10/4 = 2.5$.
- 13) **Choice A is correct.** (8.EE.C.7) Sum of areas: $x^2 + 2x + 4x + 8 = x^2 + 6x + 8$.
- 14) **Choice C is correct.** (8.F.A.3) $y = \frac{1}{x^2}$ is a reciprocal function with x in the denominator, making it nonlinear. All others are linear.
- 15) **Choice C is correct.** (8.G.C) Let $m =$ months. Provider A total cost: $60m$. Provider B total cost: $100 + 40m$. Setting them equal: $60m = 100 + 40m$, so $20m = 100$, giving $m = 5$ months.
- 16) **The correct answer is $\frac{1}{6}$.** (8.G.B.7) Favorable outcomes: (1,6), (2,5), (3,4), (4,3), (5,2), (6,1). That's 6 of 36. $P = \frac{6}{36} = \frac{1}{6}$.
- 17) **Choice C is correct.** (8.F.A.1) In function notation $f(20)$, the input is $t = 20$ minutes and the output is the distance. So $f(20)$ means the distance from home after 20 minutes of driving.
- 18) **The correct answer is $\frac{1}{3}$.** (8.NS.A.1) Let $x = 0.\bar{3}$. Then $10x = 3.\bar{3}$, so $9x = 3$ and $x = \frac{1}{3}$.
- 19) **Choice C is correct.** (8.G.C.9) Two triangular bases: $2 \times \frac{1}{2}(8)(3) = 24 \text{ cm}^2$. Perimeter of triangle: $8 + 5 + 5 = 18 \text{ cm}$. Lateral area: $6 \times 18 = 108 \text{ cm}^2$. Total = $24 + 108 = 132 \text{ cm}^2$.
- 20) **Choice A is correct.** (8.G.A.1) Reflecting across $y = x$ swaps coordinates: $(x, y) \rightarrow (y, x)$. The vertex $(2, 1) \rightarrow (1, 2)$, which is part of the reflected rectangle shown.
- 21) **The correct answer is A, C.** (8.G.A.4) Correct: (A) Corresponding angles are congruent — definition of similarity. (C) Corresponding sides are proportional — they scale by a constant factor k . Incorrect: (B) Equal length is congruence, not similarity. (D) Congruence requires equality; similarity allows scaling. (E) Scale factor can be any positive number; $k < 1$ is a reduction, still similarity.
- 22) **Choice A is correct.** (8.EE.B.6) In slope-intercept form $y = mx + b$, the coefficient m is the slope. Here $m = -2$.
- 23) **Choice A is correct.** (8.EE.C.7) Distribute: $2t + 6 = t + 10$. Subtract t and 6: $t = 4$.
- 24) **Choice C is correct.** (8.EE.C.7) Dividing by -6 requires flipping: $x \leq 4$, not $x \geq 4$.
- 25) **Choice D is correct.** (8.G.B.8) Slope: $\frac{4-2}{1-0} = 2$. Using (0, 2): $y = 2x + 2$. Shading ABOVE requires $\geq$ with a solid line.
- 26) **Choice B is correct.** (8.F.B.4) Linear functions have constant slope. Option B: slope from 1 to 2 is $\frac{8-5}{1} = 3$; from 2 to 3 is $\frac{11-8}{1} = 3$. Constant, so linear.
- 27) **Choice B is correct.** (8.G.C.9) $V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times 3.14 \times 49 \times 12 = \frac{1}{3} \times 1846.32 = 615.44 \text{ cm}^3$.
- 28) **Choice A is correct.** (8.SP.A.3) The slope is 75, meaning the account increases by \$75 each month.



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Hi, Calm Solver!

◇ This deep and steady book gave you six full Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. A calm mind can see choices more clearly. That matters in Grade 8, where one problem may have several possible entry points. ◇

★ **Remember this:** You practiced building calm by doing full tests. Each completed page is rehearsal for staying steady when the real test feels serious. ★

Calm-Test Moves

- **Pause:** Give your brain one quiet second.
- **Choose:** Pick the first useful step.
- **Continue:** Do not demand perfection immediately.
- **Check:** Use review time wisely.

Grade 8 test-day tip: If you feel rushed, slow your reading for one sentence. Clear reading saves time.

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

Jay Daie

Your Calm-Test Coach

PRACTICE TODAY. ACHIEVE TOMORROW.

6

Give your child the confidence and skills they need with **6 full-length Grade 8 Math** practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, strengthening problem-solving abilities, and achieving success on test day!

WHAT'S INSIDE?



Standards-Aligned Practice

Questions designed to cover essential Grade 8 math standards.



Variety of Question Types

Multiple-choice, short answer, and more to build well-rounded skills.



Real-World Applications

Engaging problems that connect math to everyday life.



Step-by-Step Progress

Track improvement and build confidence with every test.



COVERS ALL ESSENTIAL TOPICS

- | | |
|---------------------------------------|----------------------------|
| ✓ The Number System | ✓ Statistics & Probability |
| ✓ Expressions & Equations | ✓ Pythagorean Theorem |
| ✓ Ratios & Proportional Relationships | ✓ Volume & Surface Area |
| ✓ Linear Equations | ✓ Transformations |
| ✓ Functions | ✓ Inequalities |
| ✓ Geometry | ✓ Data Analysis & Graphing |
| | ✓ And More! |



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2 ONLINE TESTS



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