

3

Rhode Island

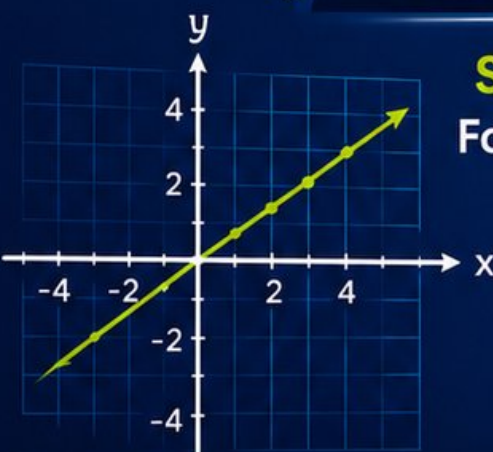
RICAS

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$V = s^3$$



$$y = mx + b$$
$$2x + 5 = 13$$
$$x = 4$$



3 PRINTED TESTS



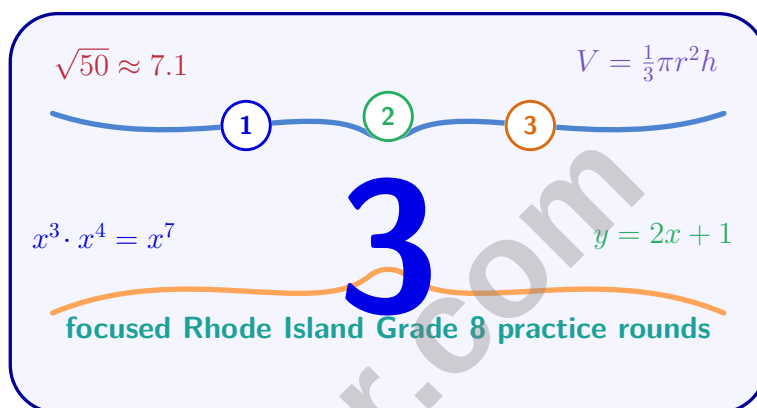
2 ONLINE TESTS



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

3 Rhode Island RICAS Grade 8 Math Practice Tests

Standards-Aligned Rhode Island Review for Grade 8 Math Success



Three 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!

Three focused rounds for sharper RICAS math thinking

This book gives you three 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 three-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?

Three RICAS tests, 120 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Test 3	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.



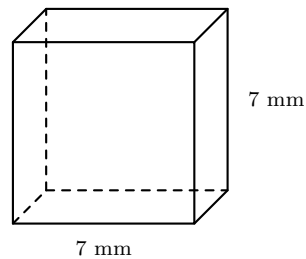
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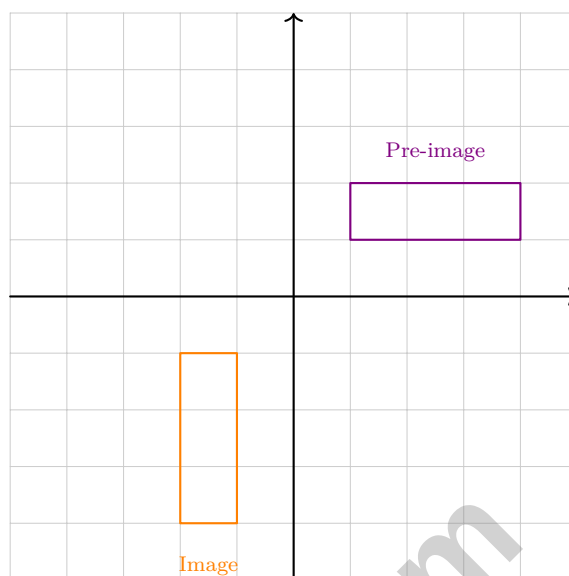
- 1) A triangle has interior angles in the ratio 2 : 3 : 4. What is the measure of the smallest angle?

☐ A. 20° ☐ C. 40° ☐ B. 30° ☐ D. 50° 

2)

The cube shown has an edge length of 7 mm. Calculate its surface area.

☐ A. 49 mm^2 ☐ C. 294 mm^2 ☐ B. 196 mm^2 ☐ D. 343 mm^2 



3)

Which sequence of transformations was applied?

- ☐ A. Translate 5 units down, then rotate 90°
☐ C. Rotate 90° counterclockwise, then translate 5 units down
- ☐ B. Reflect across the x -axis, then rotate
 ☐ D. Dilate by scale factor 2, then translate

4) Solve for p : $0.3p + 1.2 = 2.4$

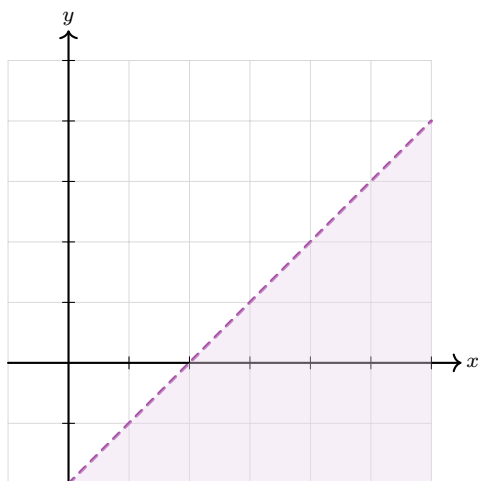
- ☐ A. $p = 3$
☐ C. $p = 2$
- ☐ B. $p = 5$
☐ D. $p = 4$

5) Solve: $2(3 - x) \geq 4$

- ☐ A. $x \geq 1$
☐ C. $x \geq -1$
- ☐ B. $x \leq -1$
☐ D. $x \leq 1$



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6)

The dashed line and shading below show:

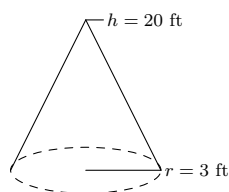
☐ A. $y > x - 2$

☐ C. $y \geq x - 2$

☐ B. $y < x - 2$

☐ D. $y \leq x - 2$

- 7) The mass of the Sun is approximately 2×10^{30} kg. How many times more massive is the Sun than Earth, which has mass 6×10^{24} kg?



8)

A cone has radius 3 ft and height 20 ft. What is its approximate volume? (Use $\pi \approx 3.14$.)

☐ A. 188.4 ft^3

☐ C. 226.08 ft^3

☐ B. 56.52 ft^3

☐ D. 339.12 ft^3



1) Simplify $n^6 \cdot n^{-4} \cdot n^3$.

☐ A. n^1

☐ C. n^{-5}

☐ B. n^{13}

☐ D. n^5

2) Convert $0.1\overline{35}$ to a fraction in simplest form.

☐ A. $\frac{1}{135}$

☐ C. $\frac{135}{999}$

☐ B. $\frac{135}{1000}$

☐ D. $\frac{134}{990} = \frac{67}{495}$

3) Between which two consecutive integers does $\sqrt[3]{100}$ lie?

☐ A. 2 and 3

☐ C. 3 and 4

☐ B. 5 and 6

☐ D. 4 and 5

4) Which expression is larger: $\sqrt{5} + \sqrt{6}$ or 4.8?

☐ A. $\sqrt{5} + \sqrt{6}$ is larger

☐ C. They are equal

☐ B. Cannot be determined

☐ D. 4.8 is larger

5) Which is equivalent to 8.2×10^{-2} ?

☐ A. 820

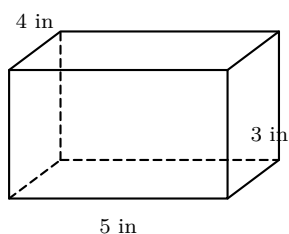
☐ C. 0.82

☐ B. 82

☐ D. 0.082



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6)

A rectangular prism has dimensions 5 inches $\times$ 4 inches $\times$ 3 inches. If you wrap a ribbon around only the four vertical sides (not the top or bottom), how much area is covered?

☐ A. 12 in^2

☐ C. 54 in^2

☐ B. 24 in^2

☐ D. 94 in^2

7) A point P is translated by the vector $(5, -2)$ to get point P' . If you want to undo this translation and return to P , which translation vector should you apply to P' ?

☐ A. $(5, -2)$

☐ C. $(5, 2)$

☐ B. $(-5, 2)$

☐ D. $(-5, -2)$

8) Solve for x : $\frac{2x}{3} = 8$

☐ A. $x = 12$

☐ C. $x = 24$

☐ B. $x = 16$

☐ D. $x = 6$

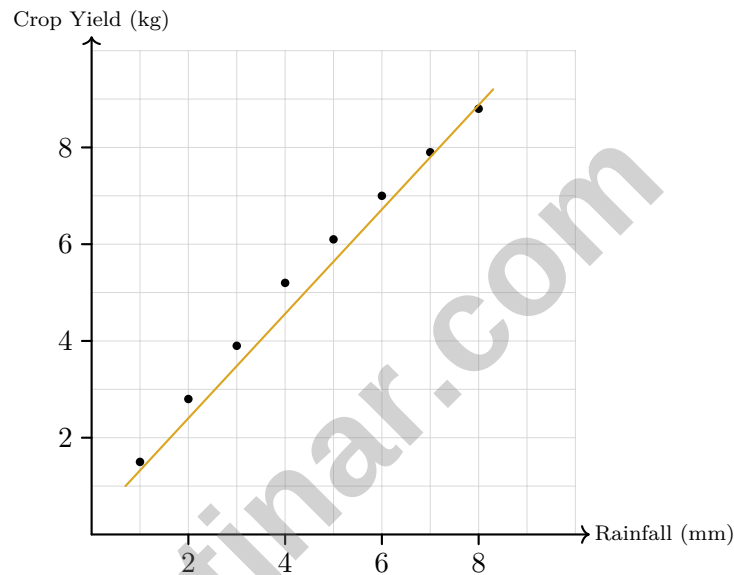
9) Given $f(x) = 4x - 3$, find $f(5)$.



- 1) Function $h(x) = -2x + 7$ and function k shown in the table: $(0, 7)$, $(1, 5)$, $(2, 3)$. Which statement is true?

x	0	1	2
$k(x)$	7	5	3

- ☐ A. h has a steeper slope than k .
 ☐ C. Both have equal slopes.
 ☐ B. k has a steeper slope than h .
 ☐ D. The slopes cannot be compared.



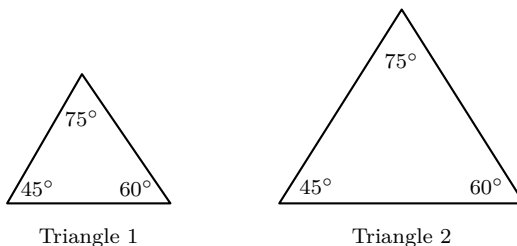
2)

In a study of rainfall and crop yield, the trend line shows a positive relationship. How much would yield increase for every 1 mm increase in rainfall?

- ☐ A. Between 1 and 2 kg
 ☐ C. Between 2 and 3 kg
 ☐ B. Less than 1 kg
 ☐ D. More than 3 kg



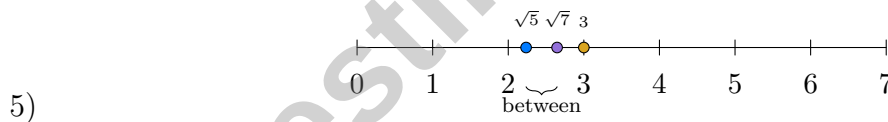
- 3) Two triangles both have angles measuring 45° , 60° , and 75° . Are these triangles necessarily similar?



- ☐ A. No, the sides must also be proportional
☐ B. No, only two angles are given
☐ C. Yes, angles alone determine similarity (AAA)
☐ D. Only if the triangles are congruent
- 4) The table shows a function. Find $f(0)$.

x	-1	0	1	2
$f(x)$	2	3	4	5

- ☐ A. 3
☐ B. 2
☐ C. 4
☐ D. 0



Based on the number line, which statement is correct?

- ☐ A. $\sqrt{5}$ and $\sqrt{7}$ are both less than 1
☐ B. $\sqrt{7} > 3$
☐ C. 3 is irrational
☐ D. $2 < \sqrt{5} < \sqrt{7} < 3$



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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 C is correct.** (8.G.A.5) Let the angles be $2x$, $3x$, and $4x$. Sum: $2x + 3x + 4x = 180$, so $9x = 180$ and $x = 20^\circ$. Smallest angle: $2x = 40^\circ$.
- 2) **Choice C is correct.** (8.G.C.9) Surface area of a cube = $6s^2 = 6(7)^2 = 6(49) = 294 \text{ mm}^2$. Distractors: 49 (one face only), 196 (only 4 faces), 343 (edge cubed, confusing with volume).
- 3) **Choice C is correct.** (8.G.A.1) A 90° counterclockwise rotation sends the rectangle to a vertical position. Translating that rotated image 5 units down matches the orange image.
- 4) **Choice D is correct.** (8.EE.C.7) Subtract 1.2: $0.3p = 1.2$. Divide by 0.3: $p = 4$.
- 5) **Choice D is correct.** (8.EE.C.7) Distribute: $6 - 2x \geq 4$. Subtract 6: $-2x \geq -2$. Divide by -2 (FLIP): $x \leq 1$.
- 6) **Choice B is correct.** (8.G.B.8) DASHED line means strict inequality ($<$ or $>$). Shading BELOW means $y <$. Combined: $y < x - 2$.
- 7) **The correct answer is 3.33×10^5 .** (8.EE.A.3) Divide: $\frac{2 \times 10^{30}}{6 \times 10^{24}} = \frac{2}{6} \times 10^6 = \frac{1}{3} \times 10^6 \approx 3.33 \times 10^5$.
- 8) **Choice A is correct.** (8.G.C.9) $V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times 3.14 \times 9 \times 20 = \frac{1}{3} \times 565.2 = 188.4 \text{ ft}^3$.
- 9) **The correct answer is $\frac{34}{99}$.** (8.NS.A.1) Set $x = 0.\overline{34}$, so $100x = 34.\overline{34}$. Subtracting: $100x - x = 34$, giving $99x = 34$ and $x = \frac{34}{99}$.
- 10) **Choice C is correct.** (8.SP.A.3) Set $y = 0$: $0 = -0.5x + 5 \Rightarrow 0.5x = 5 \Rightarrow x = 10$.
- 11) **Choice D is correct.** (8.G.B.7) Total installment cost: $250 + 150 \times 12 = 250 + 1800 = \$2,050$. Finance charge: $2050 - 1500 = \$550$.
- 12) **Choice D is correct.** (8.EE.A.2) $5.5^2 = 30.25$ and $5.4^2 = 29.16$. Since 30 is between these, $\sqrt{30} \approx 5.48$, closest to 5.5.
- 13) **Choice C is correct.** (8.EE.B.5) Slope $k = \frac{5}{5} = 1$. The line has a 45-degree angle, so $y = x$.
- 14) **Choice D is correct.** (8.EE.B.6) Using $y = mx + b$: $5 = \frac{1}{2}(1) + b$, so $5 = \frac{1}{2} + b$, thus $b = \frac{9}{2}$.
- 15) **The correct answer is 12.96.** (8.NS.A.2) $(3.6)^2 = 12.96$, which is slightly less than 13.
- 16) **Choice C is correct.** (8.EE.C) Add the equations to eliminate y : $(2x + y) + (x - y) = 7 + 2$, so $3x = 9$, giving $x = 3$. Substitute: $3 - y = 2$, so $y = 1$. Solution: $(3, 1)$.
- 17) **Choice C is correct.** (8.F.A.1) The vertical line test is the definition test for functions. If no vertical line intersects the graph more than once, it is a function.
- 18) **Choice D is correct.** (8.F.A.3) Only $y = -3x + 4$ fits the linear form $y = mx + b$. Options A (exponential), B (reciprocal), and C (absolute value) are all nonlinear.
- 19) **Choice A is correct.** (8.F.B.4) At constant speed with no initial distance, the slope is 60 mph and the intercept is 0. Equation: $d = 60h$.
- 20) **The correct answer is A, C.** (8.NS.A.1) $\sqrt{169} = 13$ is rational (perfect square). The repeating decimal $0.777\ldots = \frac{7}{9}$ is rational. The other values are irrational: $\sqrt{170}$ (non-perfect square), 2π (irrational multiple of π), and $\sqrt{2} + 1$ (irrational plus rational is irrational).
- 21) **Choice B is correct.** (8.F.B.5) The constant segments at $y = 2$ and $y = 5$ stay below and above $y = 4$. The increasing segment must cross $y = 4$ exactly once.
- 22) **Choice A is correct.** (8.G.A.3) Reflecting across the x -axis maps $(0, 1) \rightarrow (0, -1)$ and $(2, 2) \rightarrow (2, -2)$. Translating left 4 gives $(-4, -1)$ and $(-2, -2)$, matching the image rectangle.
- 23) **Choice A is correct.** (8.G.B.8, 8.G.B.7) Using $a^2 + b^2 = c^2$: $20^2 + 21^2 = 400 + 441 = 841$, so $c = 29$ (the 20-21-29 triple).
- 24) **Choice B is correct.** (8.G.B.8) Distance = $\sqrt{12^2 + 5^2} = \sqrt{144 + 25} = \sqrt{169} = 13 \text{ nm}$. (This is a 5-12-13 Pythagorean triple.)
- 25) **Choice A is correct.** (8.G.B.7) Angles on a straight line sum to 180° . So $z = 180 - 38 - 71 = 71^\circ$.
- 26) **Choice B is correct.** (8.G.C.9) $B = 9 \times 4 = 36 \text{ m}^2$. $V = \frac{1}{3} \times 36 \times 6 = 72 \text{ m}^3$.
- 27) **Choice B is correct.** (8.G.A.5) Sum of known: $80 + 108 + 126 + 117 + 119 = 550^\circ$. Sixth angle: $720 - 550 = 170^\circ$.



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Hi, Grade 8 Math Star!

◇ You finished this practice set with real effort. Grade 8 math asks you to connect ideas, explain your thinking, and stay steady through multi-step problems. ◇

★ **Remember this:** Every page you completed helped build stronger habits: reading carefully, choosing a method, showing work, and checking whether the answer makes sense. You practiced across 3 full Grade 8 practice tests, and that repeated effort matters. ★

What You Built

- **Focus:** You stayed with challenging questions.
- **Accuracy:** You learned to slow down when details matter.
- **Reasoning:** You practiced explaining why a method works.
- **Readiness:** You are more prepared than when you started.

Grade 8 test-day tip: Before test day, review the questions that made you pause. Those are the best teachers.

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

Jay Daie

Your Grade 8 Math Friend

PRACTICE TODAY, ACHIEVE TOMORROW!

GRADE
8

Give your child the edge they need with **3 full-length** Grade 8 Math practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, boosting confidence, and preparing for 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.



Build Skills & Boost Confidence

Strengthen understanding and feel prepared for test day.

COVERS ALL ESSENTIAL TOPICS

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



2 Extra Online Practice Tests Included!

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PRACTICE. PREPARE. SUCCEED.



Testinar

More Practice. More Confidence.
Better **Results**.