

9

Rhode Island

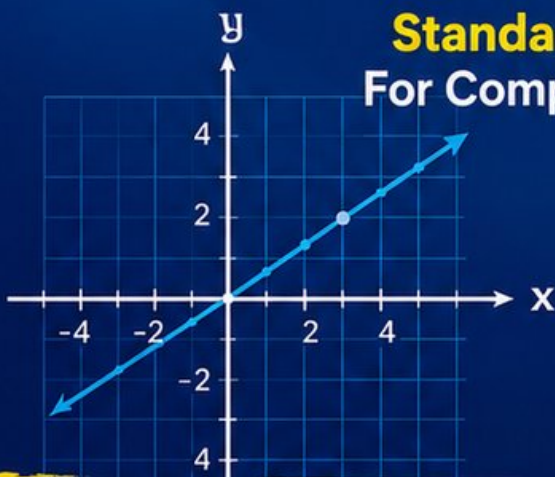
RICAS

Grade 8

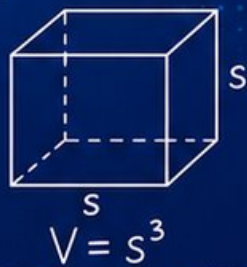
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



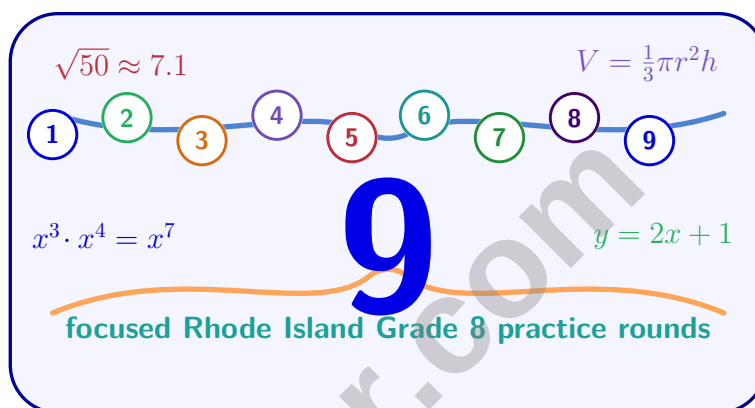
$$2x + 3y = 12$$
$$y = mx + b$$

**9 PRINTED TESTS****2 ONLINE TESTS**

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

9 Rhode Island RICAS Grade 8 Math Practice Tests

Rhode Island Standards Practice for Linear Relationships, Geometry, Data, and Volume



Nine 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!

Nine focused rounds for sharper RICAS math thinking

This book gives you nine 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 nine-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?

Nine RICAS tests, 360 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real and irrational numbers, integer exponents, scientific notation, equations, and careful reading.
Tests 4–6	Slope, systems of equations, functions, inequalities, transformations, congruence, and similarity.
Tests 7–9	Pythagorean reasoning, volume, data analysis, linear models, probability, mixed review, and stamina.
Answer Pages	Compact keys and explanations that show why each answer works.

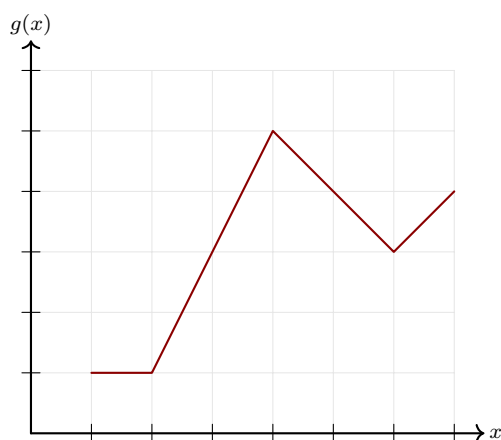
The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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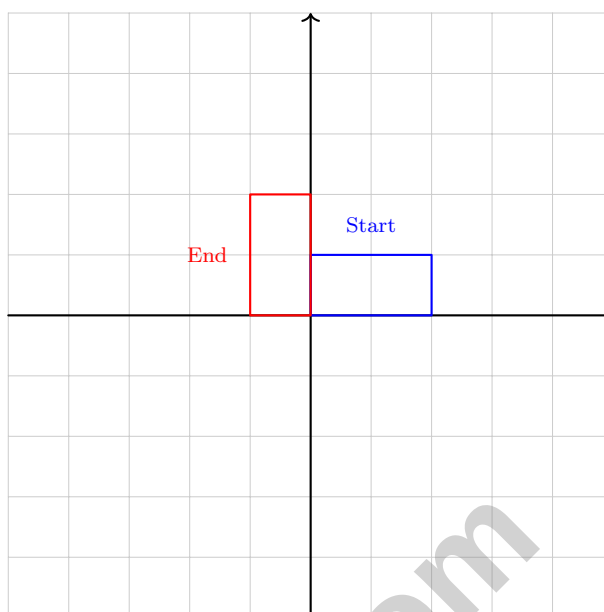
★ Practice Test 1	_____	14
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1)

State the domain of the function shown.

☐ A. $[0, 5]$ ☐ C. $[1, 5]$ ☐ B. $[0, 6]$ ☐ D. All real numbers



2)

What transformation maps the blue figure (Start) to the red figure (End)?

- ☐ A. Reflection across the y -axis ☐ D. 90° clockwise rotation about the origin
- ☐ B. Reflection across the x -axis
- ☐ C. 90° counterclockwise rotation about the origin

3) Which inequality's graph has a solid boundary line AND shades the region BELOW a negatively-sloped line?

- ☐ A. $y > -2x + 5$ ☐ C. $y \geq -2x + 5$
- ☐ B. $y < -2x + 5$ ☐ D. $y \leq -2x + 5$



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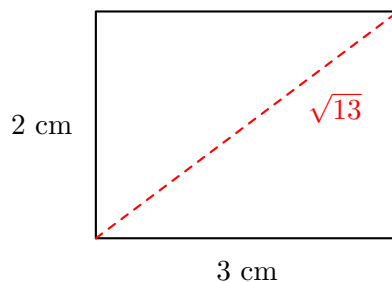
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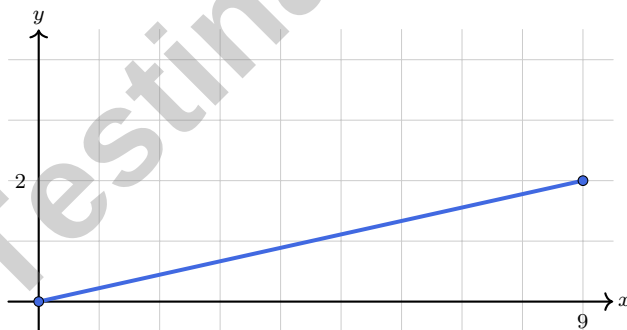
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Testinar.com

- 4) A rectangle has dimensions 2 cm by 3 cm. The diagonal is $\sqrt{13}$ cm. What is the best estimate of the diagonal?



- ☐ A. 3.0 cm ☐ C. 4.2 cm
☐ B. 6.5 cm ☐ D. 3.6 cm
- 5) A credit card has a balance of \$800 with 18% APR. Which list correctly shows the interest charged each month (assuming no payments)?
- ☐ A. \$12, \$12, \$12, ... ☐ C. \$12, \$24, \$36, ...
☐ B. \$18, \$18, \$18, ... ☐ D. \$12, \$12.18, \$12.36, ...



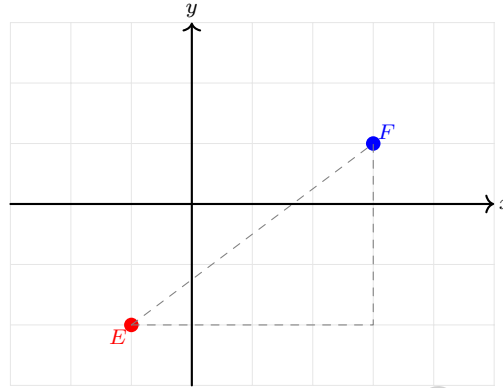
6)

The slope is approximately:

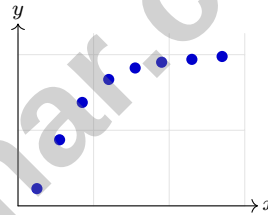
- ☐ A. 0.18 ☐ C. 4.5
☐ B. 9 ☐ D. 0.22



- 1) Points $E = (-1, -2)$ and $F = (3, 1)$ are plotted on a coordinate grid. Calculate the distance between them.

☐ A. 5☐ B. 7☐ C. $\sqrt{26}$ ☐ D. 3

2)

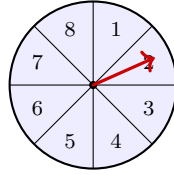


A scatter plot shows the relationship between caffeine consumption (mg) and reaction time (ms). Increasing caffeine from 0 to 100 mg decreases reaction time rapidly. However, increasing caffeine beyond 100 mg shows little additional improvement. Which term best describes this relationship?

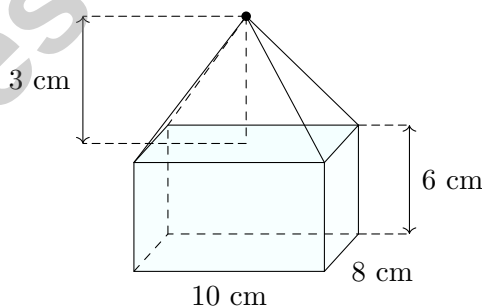
☐ A. Nonlinear association☐ B. Positive linear correlation☐ C. Negative linear correlation☐ D. No correlation

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- 3) A spinner is divided into 8 equal sections. If a student spins it once, what is the probability of landing on a specific section?



- ☐ A. $\frac{8}{1}$ ☐ C. $\frac{1}{2}$
☐ B. $\frac{1}{8}$ ☐ D. $\frac{1}{4}$
- 4) A plant height model is $h = 3t + 8$, where h is height in inches and t is time in weeks. If the data only covers weeks 1 through 10, would predicting the height at week 15 be interpolation or extrapolation?
- ☐ A. Interpolation, because 15 is within the range ☐ C. Interpolation, because we can always predict
☐ B. Neither, because the model breaks down ☐ D. Extrapolation, because 15 is outside the data range
- 5) A rectangular prism with base 10 cm by 8 cm and height 6 cm is topped with a pyramid (same base, height 3 cm). What is the total volume?



- ☐ A. 480 cm^3 ☐ C. 640 cm^3
☐ B. 560 cm^3 ☐ D. 800 cm^3

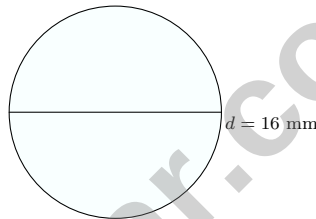


- 1) A gym offers two membership plans. Plan A costs \$50 upfront plus \$10 per month. Plan B costs \$20 per month with no upfront fee. After how many months do the total costs equal?

☐ A. 3 months ☐ C. 5 months
☐ B. 4 months ☐ D. 6 months

- 2) A cylinder has radius 1.5 inches and height 8 inches. What is the surface area? (Use $\pi \approx 3.14$.)

☐ A. 28.3 in^2 ☐ C. 75.4 in^2
☐ B. 47.1 in^2 ☐ D. 89.5 in^2



3)

A sphere has a diameter of 16 mm. What is its approximate volume? (Use $\pi \approx 3.14$.)

☐ A. 268.08 mm^3 ☐ C. 2143.57 mm^3
☐ B. 1072.33 mm^3 ☐ D. 4289.33 mm^3

- 4) A rental company charges $C = 25 + 0.15m$, where C is total cost and m is miles driven. What is the fixed cost (y-intercept)?

☐ A. \$25 ☐ C. \$40
☐ B. \$0.15 ☐ D. \$15



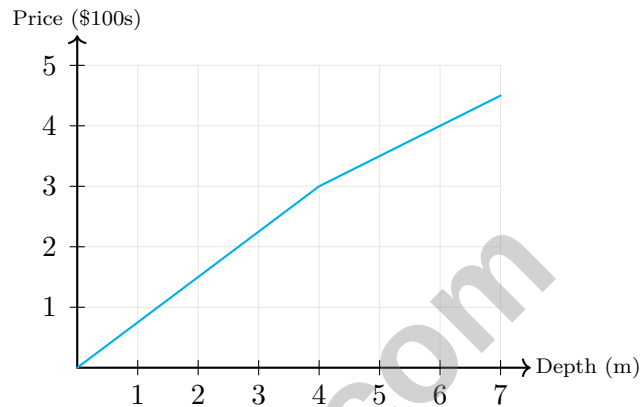
- 5) A line has slope 3 and passes through the point $(1, 7)$. Which equation represents this line?

☐ A. $y = 3x + 4$

☐ C. $y = 3x - 1$

☐ B. $y = 3x + 7$

☐ D. $y = 3x + 1$



6)

The graph shows well-drilling cost vs. depth. Why does the slope change at 4 meters depth?

☐ A. The drilling cost stays the same at all depths

☐ C. The drilling stops at 4 meters

☐ B. Different rock layers require different rates

☐ D. Cost actually decreases, shown by a negative slope

- 7) A point Q is at the origin and undergoes three transformations: first a translation right 2, then a rotation 90° counterclockwise about the origin, then a reflection across the x -axis. Where does the point end up?

☐ A. $(0, 2)$

☐ C. $(2, 0)$

☐ B. $(0, -2)$

☐ D. $(-2, 0)$



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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 B is correct.** (8.F.B.5) The graph is defined from $x = 0$ to $x = 6$, so the domain is $[0, 6]$. The range would be $[1, 5]$, but the question asks for domain.
- 2) **Choice C is correct.** (8.G.A.1) Using $(x, y) \rightarrow (-y, x)$: $(2, 0) \rightarrow (0, 2)$, $(2, 1) \rightarrow (-1, 2)$, matching the End figure.
- 3) **Choice D is correct.** (8.G.B.8) Solid line requires $\leq$ or $\geq$. Shading BELOW a negative slope means $\leq$. Combined: $y \leq -2x + 5$.
- 4) **Choice D is correct.** (8.NS.A.2) By the Pythagorean theorem, diagonal $= \sqrt{2^2 + 3^2} = \sqrt{4 + 9} = \sqrt{13} \approx 3.606 \approx 3.6$ cm.
- 5) **Choice D is correct.** (8.G.B.7) Monthly rate: $18\%/12 = 1.5\%$. Month 1: $800 \times 0.015 = \$12$. Month 2: $812 \times 0.015 = \$12.18$. Month 3 uses the new balance, about \$824.18, so the interest is $824.18 \times 0.015 \approx \12.36 .
- 6) **Choice D is correct.** (8.EE.B.5) Slope $= \frac{2}{9} \approx 0.222 \approx 0.22$. This is a very shallow line.
- 7) **Choice A is correct.** (8.EE.B.6) Slope $= \frac{3-7}{0-(-2)} = \frac{-4}{2} = -2$. When $x = 0$, $y = 3$, so $b = 3$. Thus $y = -2x + 3$.
- 8) **Choice A is correct.** (8.EE.C) Set the expressions equal: $\frac{1}{2}x + 3 = -x + 6$. Multiply by 2: $x + 6 = -2x + 12$, so $3x = 6$, giving $x = 2$. Then $y = \frac{1}{2}(2) + 3 = 4$. Solution: $(2, 4)$.
- 9) **Choice D is correct.** (8.EE.C.7) Set up: $150 + 25w > 500$. Subtract 150: $25w > 350$. Divide by 25: $w > 14$ weeks.
- 10) **Choice D is correct.** (8.F.A.1) Each country has exactly one capital city. The other relations can assign more than one output to a single input.
- 11) **Choice C is correct.** (8.F.A.3) $y = 7 + 2x$ is in the form $y = mx + b$ with $m = 2$ and $b = 7$. The other options have squared terms, square roots, or reciprocals.
- 12) **Choice A is correct.** (8.F.B.4) y -intercept is 2 (at $x = 0$). Slope is $\frac{6-2}{4-0} = \frac{4}{4} = 1$.
- 13) **Choice B is correct.** (8.G.A.3) Reflection across the x -axis negates the y -coordinate: $(x, y) \rightarrow (x, -y)$. So $(6, 4) \rightarrow (6, -4)$.
- 14) **Choice D is correct.** (8.EE.A.1) Negative exponent rule: $10^{-6} = \frac{1}{10^6}$.
- 15) **The correct answer is 100.** (8.EE.A.3) When dividing powers with the same base, subtract the exponents. $10^{5-3} = 10^2$, and $10^2 = 100$, so 10^5 is 100 times larger than 10^3 .
- 16) **Choice D is correct.** (8.EE.A.2) Volume of a cube $= s^3 = 5^3 = 125 \text{ cm}^3$.
- 17) **Choice C is correct.** (8.EE.A.4) $\frac{1.4 \times 10^{-10}}{7 \times 10^{-15}} = \frac{1.4}{7} \times 10^5 = 0.2 \times 10^5 = 2 \times 10^4$.
- 18) **The correct answer is 12.** (8.NS.A.1) Since $12 \times 12 = 144$, $\sqrt{144} = 12$.
- 19) **The correct answer is $\frac{53}{90}$.** (8.NS.A.1) Set $x = 0.5\bar{8} = 0.5888\dots$. Then $10x = 5.\bar{8}$ and $100x = 58.\bar{8}$. Subtracting: $90x = 53$, so $x = \frac{53}{90}$.
- 20) **Choice A is correct.** (8.EE.C.7) The GCF of $6x$ and 9 is 3 . Factor: $6x + 9 = 3(2x + 3)$.
- 21) **The correct answer is A,C.** (8.G.B.7) A is correct: $P(\text{heads}) = \frac{1}{2}$. C is correct: $P(\text{heads and 4}) = \frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$. B is wrong: $P(4) = \frac{1}{6}$. D is wrong: total outcomes $= 12$. E is wrong: $P(\text{not heads}) = \frac{1}{2}$.
- 22) **Choice A is correct.** (8.F.A.2) Week 1: $20 + 5(1) = 25$. Week 2: $20 + 5(2) = 30$. Week 3: $20 + 5(3) = 35$. Constant difference of 5 per week indicates linear with slope 5.
- 23) **Choice B is correct.** (8.G.A.2) Congruent figures have equal perimeters. Since ABCDEF is congruent to GHIJKL, and the perimeter of ABCDEF is 48 cm, the perimeter of GHIJKL is also 48 cm.
- 24) **Choice B is correct.** (8.G.A.5) When parallel lines are cut by a transversal, corresponding angles, alternate interior angles, and alternate exterior angles are all congruent.
- 25) **Choice A is correct.** (8.G.B.8, 8.G.B.7) The ramp surface is the hypotenuse of a right triangle: $\sqrt{3^2 + 4^2} = \sqrt{9 + 16} = \sqrt{25} = 5$ feet (the 3-4-5 triple).
- 26) **Choice A is correct.** (8.G.B.8) Correct method: $d = \sqrt{(3-0)^2 + (0-4)^2} = \sqrt{9 + 16} = \sqrt{25} = 5$ units. The student used addition instead of the Pythagorean Theorem.



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A Note for a Careful Thinker

Hi, Careful Thinker!

◇ This high-stamina book gave you nine substantial Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. This book gave you room to practice the kind of thinking eighth graders need: modeling linear relationships, solving systems, connecting algebra and geometry, and interpreting data. ◇

★ **Remember this:** The goal was never just to finish pages. The goal was to become the kind of student who knows how to begin, how to adjust, and how to check. ★

Your Careful-Thinking Toolkit

- **Read Twice:** First for the story, second for the math.
- **Label Values:** Give each number a job.
- **Check Signs:** Negatives and inequalities deserve attention.
- **Use Evidence:** Let the work prove the answer.

Grade 8 test-day tip: On test day, underline the question before solving. It keeps your answer aimed at the right target.

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

Jay Daie

Your Math Practice Coach

CONFIDENCE TODAY, SUCCESS TOMORROW!

GRADE

8

Help your child excel in math with **9 full-length Grade 8 practice tests** designed to reflect real test formats and cover all key math standards.

With a wide variety of questions and real-world applications, this book builds the skills and confidence students need to achieve their best!



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



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