

10

Rhode Island

RICAS

GRADE

8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

10

**PRINTED
TESTS**



2

**ONLINE
TESTS**



Build Confidence



Master Key Math Skills

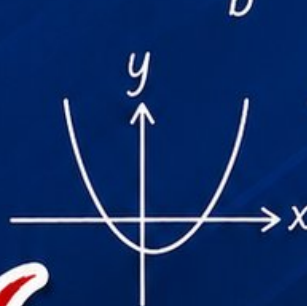
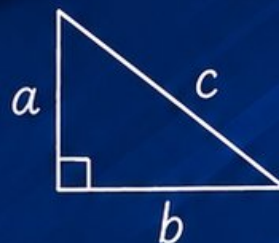


**Answer Explanations for
Every Question**



**Test-Taking Strategies
That Work**

$$y = mx + b$$



$$3x - 7 = 2(x + 5)$$
$$x = 17$$

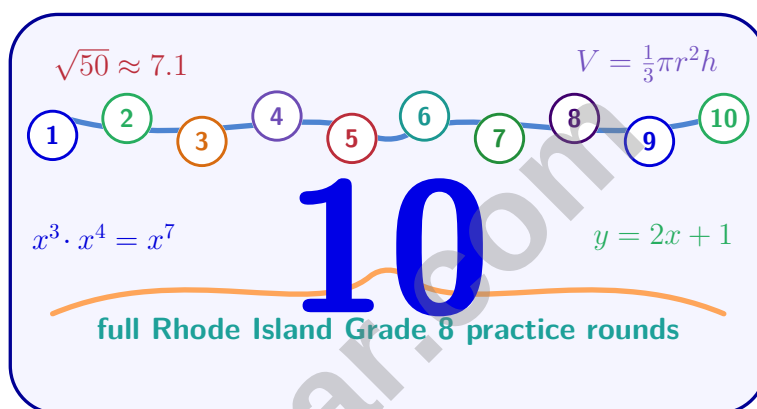


**USE THESE TWO
ADDITIONAL ONLINE
PRACTICE TESTS**

**FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.**

10 Rhode Island RICAS Grade 8 Math Practice Tests

Rhode Island Grade 8 RICAS Practice for focused coastal review of functions, exponent reasoning, algebra, geometry, data analysis, and chance



Ten complete 40-question Grade 8 RICAS practice rounds with linear relationships, scientific notation, real numbers, equations, functions, 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!

Ten focused rounds for sharper Rhode Island RICAS math thinking

This book gives you ten full Grade 8 RICAS math practice tests. Each round is built to help you notice structure, compare quantities, use linear reasoning, handle real numbers, and explain your thinking with care.

Grade 8 standards focus: This page supports **Interior Angles of Polygons** (8.G.A.5): Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and.... The same routine helps with **The Pythagorean Theorem** (8.G.B.7): Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

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 ten-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 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.

Grade 8 standards focus: Keep the routine connected to **Counting Principle and Permutations** (8.NS.A.2): Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). You will also meet **Using a Linear Model** (8.SP.A.3): Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting slope and intercept.

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?

Ten Rhode Island RICAS tests, 400 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Linear relationships, integer exponents, scientific notation, real-number reasoning, and careful reading.
Tests 4–6	Expressions, equations, inequalities, transformations, geometry, and multi-step problem solving.
Tests 7–9	Data analysis, probability, mixed review, stamina, and choosing efficient strategies.
Test 10	A final Rhode Island round to show growth across the whole book.
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.

Grade 8 standards focus: Use these habits while practicing **Estimating Irrational Numbers** (8.NS.A.2): Use rational approximations of irrational numbers to compare their size and locate them approximately on a number line diagram. A second useful connection is **Graphing Linear Inequalities in Two Variables** (8.G.B.8): Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.



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For more practice
& answers

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1) Two-way table of 500 employees by department and remote work status:

	Remote	On-Site	Total
IT	105	75	180
HR	35	85	120
Ops	60	140	200
Total	200	300	500

What is the relative frequency of IT employees among all employees?

☐ A. $\frac{105}{200}$

☐ B. $\frac{180}{500}$

☐ C. $\frac{105}{180}$

☐ D. $\frac{75}{500}$

2) A cylinder has radius 5 cm and height 12 cm. What is the lateral surface area (side only, not including the bases)?

☐ A. $60\pi \text{ cm}^2$

☐ B. $120\pi \text{ cm}^2$

☐ C. $150\pi \text{ cm}^2$

☐ D. $300\pi \text{ cm}^2$

3) A cylinder has a volume of 1256 cm^3 and radius of 10 cm. What is its height? (Use $\pi \approx 3.14$.)

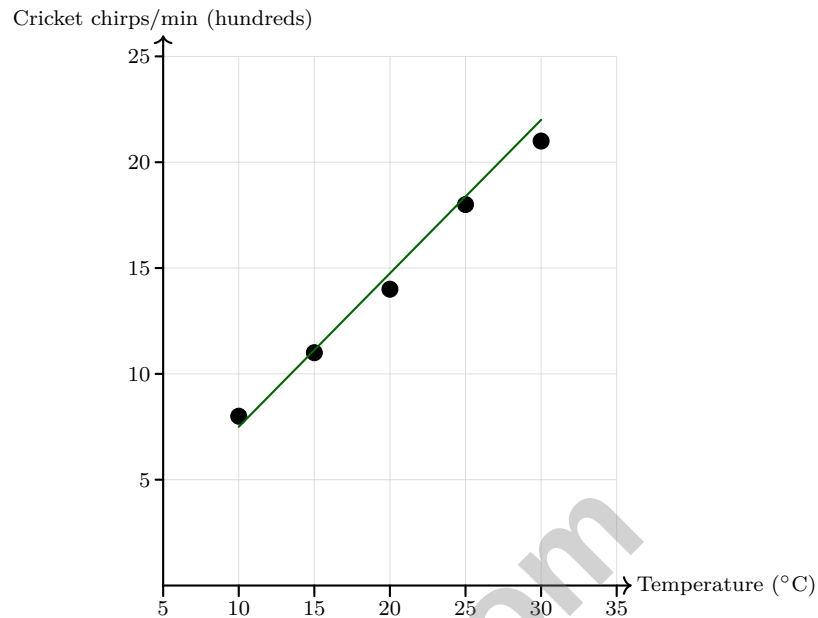
☐ A. 4 cm

☐ B. 6 cm

☐ C. 8 cm

☐ D. 12 cm





4)

Based on the scatter plot, as temperature increases by 5°C , cricket chirps increase by approximately how many (in hundreds)?

☐ A. 0.5 hundreds

☐ C. 1.5 hundreds

☐ B. 1 hundred

☐ D. 3 hundreds

5) For which system do the two equations represent parallel lines?

☐ A. $y = 2x + 1$ and $y = 2x - 3$
☐ C. $y = 2x + 1$ and $y = x + 3$
☐ B. $y = 2x + 1$ and $y = -\frac{1}{2}x + 1$
☐ D. $y = 2x + 1$ and $y = 2x + 1$
6) Which inequality is equivalent to $2x + 1 \geq 9$?
☐ A. $x \leq 4$
☐ C. $x \geq 4$
☐ B. $x < 4$
☐ D. $x > 4$


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7) Solve for x : $x^3 = 343$

8) A taxi charges \$3 per mile plus a \$5 base fare. If m is the number of miles, which expression represents the total charge?

☐ A. $5m + 3$

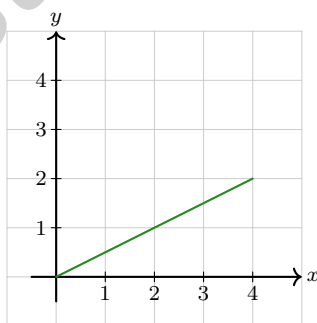
☐ C. $3m - 5$

☐ B. $3m + 5$

☐ D. $\frac{3m}{5}$

9) A runner trains at 6 miles per hour. Write the equation $d = kt$ for distance d (miles) and time t (hours). What is k ?

10) Which of the following graphs shows a LINEAR function?

☐ A. No, the slope is less than 1☐ C. No, only if it passes through the origin☐ B. No, because the rate of change varies☐ D. Yes, the line is straight

- 1) Function $p(x) = \frac{3}{2}x - 4$ and the table for function q : $(0, 2)$, $(2, 5)$, $(4, 8)$. Which has a steeper slope?

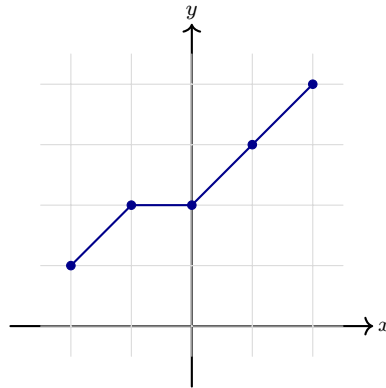
x	0	2	4
$q(x)$	2	5	8

- ☐ A. $p(x)$
☐ C. Both have equal slopes.
- ☐ B. $q(x)$
☐ D. Cannot be determined.
- 2) A data analyst fits two different trend lines to a scatter plot. Line A has MAD (mean absolute deviation of residuals) = 0.3, while Line B has MAD = 0.8. Which conclusion is justified?
- ☐ A. Line B is better because it has a higher MAD
 ☐ C. Both lines are equally good
- ☐ B. Line A is better because residuals are closer to zero
 ☐ D. We cannot compare lines using MAD alone
- 3) Triangle with vertices at $(1, 0)$, $(3, 0)$, and $(2, 2)$ is dilated by a scale factor of 0.5 from the origin. What is the area ratio of the new triangle to the original?
- ☐ A. 0.5
 ☐ C. 2
- ☐ B. 0.25
 ☐ D. 4



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4) From the graph of $f(x)$, what is $f(-1)$?



☐ A. -1

☐ C. 1

☐ B. 2

☐ D. 3

5) Which product is rational?

☐ A. $\sqrt{6} \times \sqrt{10}$

☐ C. $\sqrt{7} \times \sqrt{11}$

☐ B. $\sqrt{3} \times \sqrt{5}$

☐ D. $\sqrt{2} \times \sqrt{2}$

6) What is $0.\overline{6}$ as a fraction?

☐ A. $\frac{1}{6}$

☐ C. $\frac{6}{99}$

☐ B. $\frac{6}{10}$

☐ D. $\frac{2}{3}$

7) A right triangle has legs of length 3 and 5 units. Which integer range contains the hypotenuse length?

☐ A. Between 8 and 9

☐ C. Between 7 and 8

☐ B. Between 6 and 7

☐ D. Between 5 and 6



1) Factor $x^2 + 5x - 36$.

☐ A. $(x + 9)(x - 4)$

☐ B. $(x - 9)(x + 4)$

☐ C. $(x + 12)(x - 3)$

☐ D. $(x + 6)(x - 6)$

2) $\frac{6 \times 10^5}{2 \times 10^{10}} = ?$

☐ A. 12×10^{-5}

☐ B. 8×10^{-5}

☐ C. 3×10^5

☐ D. 3×10^{-5}

3) Function $f(x) = 2x + 3$ and another through $(0, 1)$ and $(2, 7)$. Difference in slopes?

4) A student's test score improves linearly throughout a semester. After assignment 4, the score is 68. After assignment 10, the score is 82. What is the slope (improvement per assignment)?

☐ A. $\frac{7}{3}$ points per assignment

☐ B. 2 points per assignment

☐ C. 3 points per assignment

☐ D. $\frac{1}{2}$ point per assignment

5) To solve the system $y = 2x - 3$ and $y = -x + 6$, which method is most efficient?

☐ A. Elimination

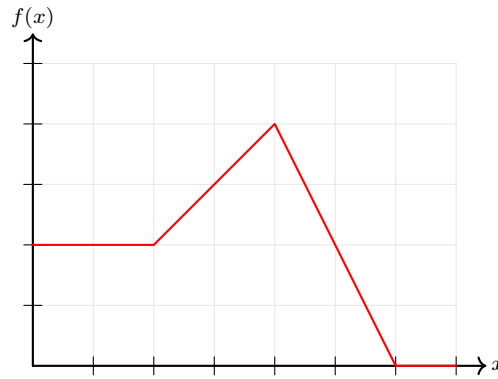
☐ B. Graphing

☐ C. Substitution

☐ D. Guess and check



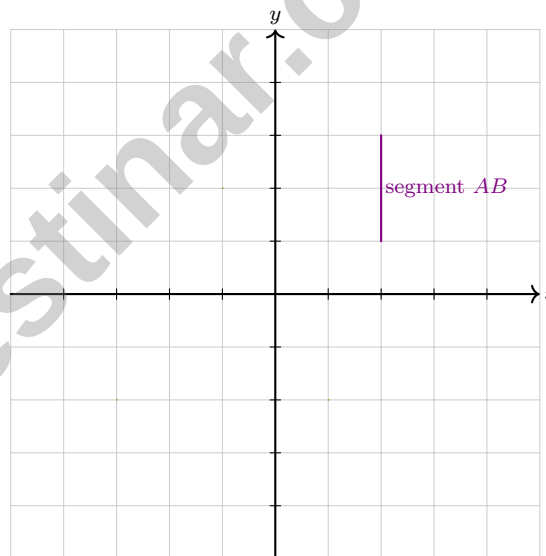
6)



Identify the intervals where the function is increasing.

- ☐ A. From $x = 1$ to $x = 3$ only
☐ B. From $x = -1$ to $x = 1$
☐ C. From $x = 1$ to $x = 3$ and from $x = 3$ to $x = 5$
☐ D. From $x = -1$ to $x = 3$

7)



Segment AB with endpoints $A(2, 1)$ and $B(2, 3)$ is rotated 90° counterclockwise about the origin. Which of the following is an endpoint of the image segment $A'B'$?

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



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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

- Choice B is correct.** (8.SP.A.4) Marginal relative frequency for IT employees: row total divided by grand total = $\frac{180}{500} = 0.36$.
- Choice B is correct.** (8.G.C.9) Lateral surface area = $2\pi rh = 2\pi(5)(12) = 120\pi \text{ cm}^2$.
- Choice A is correct.** (8.G.C.9) From $V = \pi r^2 h$: $1256 = 3.14 \times 100 \times h \Rightarrow h = \frac{1256}{314} = 4 \text{ cm}$.
- Choice D is correct.** (8.SP.A.3) From 10°C to 15°C (an increase of 5°), chirps go from about 8 to 11 hundreds, an increase of about 3 hundreds.
- Choice A is correct.** (8.EE.C) Parallel lines have the same slope but different y -intercepts. Both equations $y = 2x + 1$ and $y = 2x - 3$ have slope 2 but different intercepts (1 and -3). Option D is the same line (infinitely many solutions).
- Choice C is correct.** (8.EE.C.7) Subtract 1: $2x \geq 8$. Divide by 2: $x \geq 4$.
- The correct answer is 7.** (8.EE.A.2) $\sqrt[3]{343} = 7$ because $7 \times 7 \times 7 = 343$.
- Choice B is correct.** (8.F.A.1) Base fare is \$5. Charge per mile is \$3. Total charge = $3m + 5$.
- The correct answer is 6.** (8.EE.B.5) The unit rate is 6 miles per hour, so $k = 6$ and $d = 6t$.
- Choice D is correct.** (8.F.A.3) A straight line indicates a linear function, regardless of slope or intercept. This graph clearly shows a straight line.
- The correct answer is 12.** (8.EE.B.6) Set $x = 0$: $3(0) + y = 12$, so $y = 12$. Alternatively, solve for y : $y = -3x + 12$, so $b = 12$.
- Choice A is correct.** (8.F.B.4) y -intercept is 5 at $(0, 5)$. Slope: $\frac{13-5}{2-0} = \frac{8}{2} = 4$. Equation: $y = 4x + 5$.
- Choice C is correct.** (8.F.B.5) The graph shows a flat segment at 100% from hours 0 to 2, indicating no charge change during idle time. From hour 2 onward, the slope is negative (draining). Option D is false because the battery approaches 1.5%, not 0%.
- Choice B is correct.** (8.G.A.3) Reflections preserve distance. So ℓ' has the same length as ℓ : 2 units.
- Choice B is correct.** (8.G.B.8, 8.G.B.7) The student is confusing the Pythagorean Theorem with multiplication. For legs 3 and 4: $3 \times 4 = 12$ is incorrect, but $\sqrt{3^2 + 4^2} = \sqrt{25} = 5$ is correct.
- Choice B is correct.** (8.G.B.8) Since both points have $y = 5$, the horizontal distance is $|12 - 0| = 12$.
- Choice C is correct.** (8.G.B.7) Four angles around an intersection point sum to 360° . If one angle is b , the sum of the other three is $360 - b$.
- Choice A is correct.** (8.G.C.9) $V = \frac{1}{3} \times 25 \times 9 = 75 \text{ cm}^3$.
- The correct answer is \$240.** (8.G.B.7) $I = Prt = 2000 \times 0.03 \times 4 = \240 .
- Choice A is correct.** (8.G.A.5) Using $\frac{(n-2) \times 180}{n} = 108$: $(n-2) \times 180 = 108n \Rightarrow 180n - 360 = 108n \Rightarrow 72n = 360 \Rightarrow n = 5$.
- The correct answer is B,D.** (8.EE.A.3) B: $\frac{2.1 \times 10^7}{2.1 \times 10^5} = 10^2 = 100$. D: $\frac{8.3 \times 10^6}{8.3 \times 10^3} = 10^3 = 1,000$. A is false because $10^{-5} < 10^{-3}$. C is false because $10^{-2} \neq 10^2$. E is false because $5 \times 10^{-4} > 5 \times 10^{-6}$.
- Choice D is correct.** (8.SP.A.1) The tight downward trend shows a strong negative association: as phone usage increases, battery life decreases. This is a clear negative correlation pattern.
- Choice A is correct.** (8.G.B.8) Deviations from 5.2 are 3.2, 3.2, 1.2, 1.2, 1.2, 0.8, 0.8, 0.8, 2.8, 2.8. Their sum is 17.6, so the MAD is $17.6 \div 10 = 1.76$.
- Choice C is correct.** (8.EE.A.1) $(3x^2)^2 = 9x^4$. Then $9x^4 \cdot x^{-3} = 9x^{4-3} = 9x^1 = 9x$.
- Choice C is correct.** (8.EE.A.4) Multiply: $4.2 \times (9.46 \times 10^{15}) = (4.2 \times 9.46) \times 10^{15} \approx 39.7 \times 10^{15} = 3.97 \times 10^{16} \text{ m}$.
- Choice A is correct.** (8.EE.C.7) $(x-4)^2 = x^2 - 8x + 16$, not $x^2 - 16$. The student missed the middle term $-8x$ that comes from $2(x)(-4)$.
- Choice A is correct.** (8.F.A.2) $T_{\text{oven}}(10) = 15(10) + 70 = 220$ degrees. Slope of freezer: $(-15 - (-5))/2 = -5$, so $T_{\text{freeze}}(10) = -5 - 5(10) = -55$ degrees. Oven at 220 is much warmer.
- Choice C is correct.** (8.G.A.2) Perimeter = $13 + 13 + 10 = 36 \text{ cm}$. Triangle 2 is congruent, so it has the same perimeter.



You Know More Than You Think

Hi, Skilled Learner!

◇ After working through Grade 8 practice, you now have more tools than you may realize: models, formulas, graphs, equations, and reasoning habits. ◇

★ **Remember this:** The next step is learning when to use each tool. That comes from practice, review, and the courage to try a method even when you are unsure. This version gave you 10 opportunities to rehearse test-day habits. ★

Tools You Can Use

- **Models:** Make relationships visible.
- **Equations:** Represent unknowns clearly.
- **Graphs:** Show change and location.
- **Formulas:** Organize measurement problems.

Grade 8 test-day tip: Before solving, name the tool you plan to use. That small choice makes your work more intentional.

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

Jay Daie

Your Skill-Building Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **10** full-length Math practice tests and **2** online tests to help Grade 8 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:

10

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.



Master Key Skills

Develop strong math skills and problem solving abilities.



Improve Understanding

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



Test Strategies

Learn proven strategies to approach every question with confidence.



Boost Performance

Apply your knowledge and achieve your best score!

TOPICS COVERED

- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Inequalities
- ✓ Functions
- ✓ Geometry
- ✓ Ratios & Proportions
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement
- ✓ Pythagorean Theorem
- ✓ Surface Area & Volume
- ✓ 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!



PRACTICE
REGULARLY



STAY
FOCUSED



SOLVE
CONFIDENTLY



SUCCEED
BRIGHTLY