

Rhode Island

RICAS

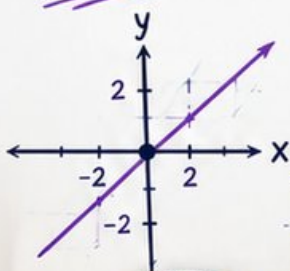
GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

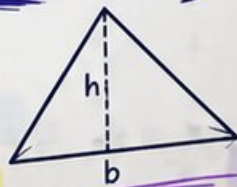
$$y = mx + b$$



**BUILD
CONFIDENCE.
SHARPEN SKILLS.
ACE YOUR
EXAM!**

Practice
Today
Succeed
Tomorrow!

$$A = \frac{1}{2}bh$$



7 PRINTED
TESTS



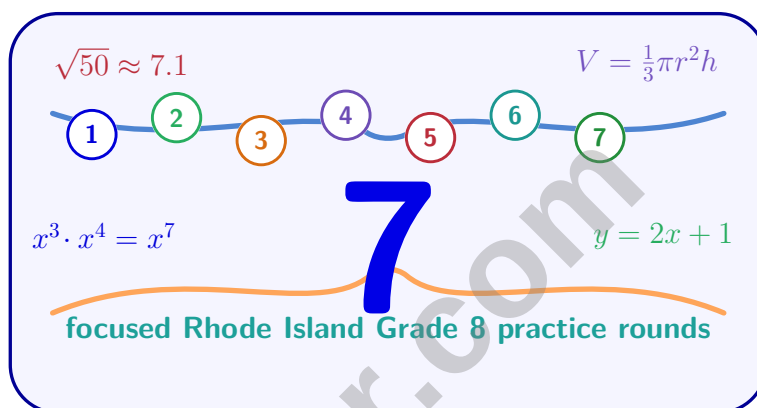
2 ONLINE
TESTS



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

7 Rhode Island RICAS Grade 8 Math Practice Tests

Seven Focused RICAS Tests for Algebra, Geometry, and Data Analysis



Seven 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!

Seven focused rounds for sharper RICAS math thinking

This book gives you seven 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 seven-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?

Seven RICAS tests, 280 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.
Test 7	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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1) A transversal cuts two parallel lines. One of the eight angles formed is 157° . How many of the eight angles measure 157° ?

☐ A. 1

☐ C. 4

☐ B. 2

☐ D. 8

2) Solve by substitution:
$$\begin{cases} x = 4 - y \\ x + 3y = 8 \end{cases}$$

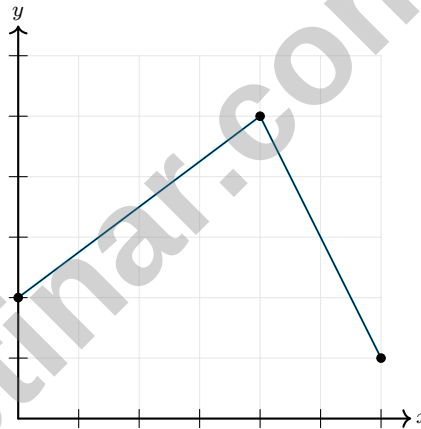
☐ A. (0, 4)

☐ C. (2, 2)

☐ B. (1, 3)

☐ D. (3, 1)

3)



Which set of statements is true about the piecewise linear function?

☐ A. It increases from $x = 0$ to $x = 4$, decreases from $x = 4$ to $x = 6$, and has maximum value 5

☐ B. It has a zero at $x = 3$, decreases from $x = 4$ to $x = 6$, and has y -intercept 5

☐ C. It increases from $x = 0$ to $x = 6$, has maximum value 6, and has y -intercept 2

☐ D. It decreases from $x = 0$ to $x = 4$, has a zero at $x = 3$, and has maximum value 2


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- 4) Solve for m : $\frac{m}{5} - 2 = 3$. Show all work and verify your solution.

- 5) A right triangle has legs of $\sqrt{24}$ and 1. What is the hypotenuse in simplified form?

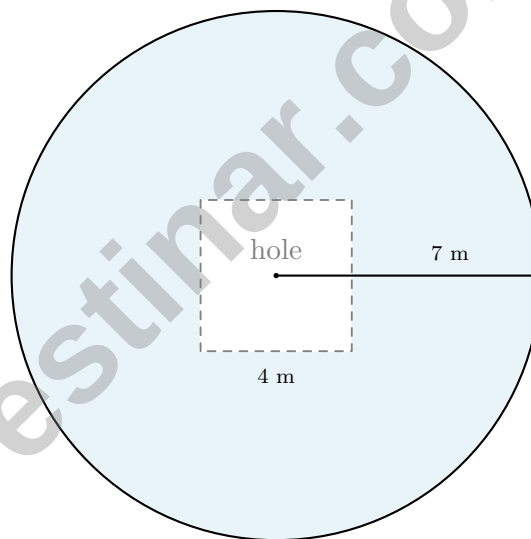
☐ A. $\sqrt{24}$

☐ C. $\sqrt{23}$

☐ B. 5

☐ D. 25

- 6) A composite figure has a circular disk (radius 7 m) with a square hole (side 4 m) cut from the center. Find the remaining area. Use $\pi \approx 3.14$.



☐ A. 137.86 m^2

☐ C. 153.86 m^2

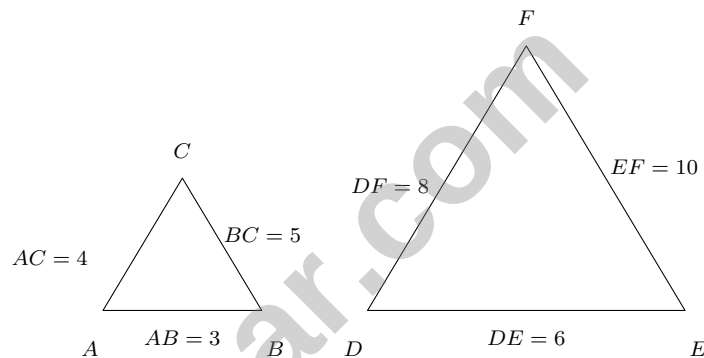
☐ B. 149.86 m^2

☐ D. 169.86 m^2



- 7) A student has 45 points and earns 5 points per quiz. How many quizzes are needed to reach at least 70 points?

- 8) Two triangles are shown below. Triangle ABC has sides 3, 4, 5. Triangle DEF has sides 6, 8, 10. Are these triangles similar?



- ☐ A. No, because the sides are different lengths
 ☐ C. No, the angles are not equal
- ☐ B. Yes, each side of DEF is twice the corresponding side of ABC
☐ D. Cannot be determined
- 9) The inequality has x -intercept 6 and y -intercept -3 . The boundary line passes through both. Which inequality has shading that includes the origin?

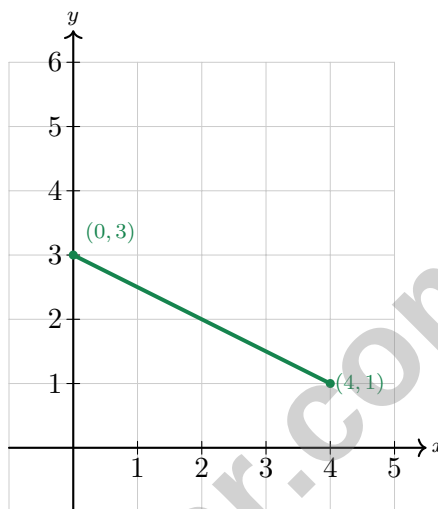
- ☐ A. $x - 2y \leq 6$
☐ C. $2y - x \leq 6$
- ☐ B. $x - 2y \geq 6$
☐ D. $2y - x \geq 6$



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- 1) Point $(1, 4)$ is reflected across the x -axis, then the image is reflected across the y -axis. What is the final image?

- ☐ A. $(1, 4)$ ☐ C. $(-1, 4)$
☐ B. $(-1, -4)$ ☐ D. $(1, -4)$



2)

What is the equation of the line shown?

- ☐ A. $y = -\frac{1}{2}x + 3$ ☐ C. $y = 2x + 3$
☐ B. $y = \frac{1}{2}x + 3$ ☐ D. $y = -2x + 3$

- 3) Consider the equation $2x + 5 = 2x + 5$. How many solutions does this have?

- ☐ A. One solution ☐ C. Infinitely many solutions
☐ B. No solution ☐ D. Two solutions



4) Write an inequality for: “A number increased by 6 is at most 15.”

☐ A. $x - 6 \leq 15$

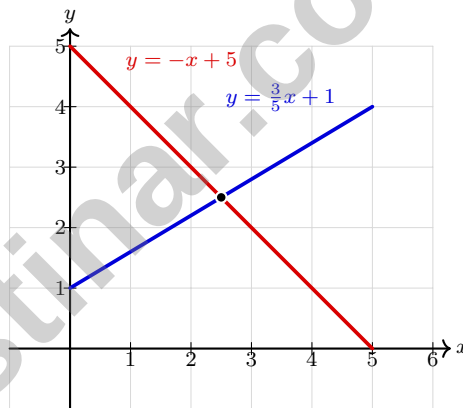
☐ C. $x + 6 < 15$

☐ B. $6x \leq 15$

☐ D. $x + 6 \leq 15$

5) Calculate $\frac{9.6 \times 10^8}{3.2 \times 10^5}$ and express in scientific notation.

6) Look at the coordinate grid. Which system of equations has the solution shown by the intersection point?



☐ A. $y = \frac{3}{5}x + 1$ and $y = -x + 5$

☐ C. $y = \frac{3}{5}x - 1$ and $y = -x + 2$

☐ B. $y = \frac{3}{5}x$ and $y = x + 4$

☐ D. $y = \frac{3}{5}x + 2$ and $y = -x + 5$



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1) What is the first difference for the sequence 5, 13, 21, 29?

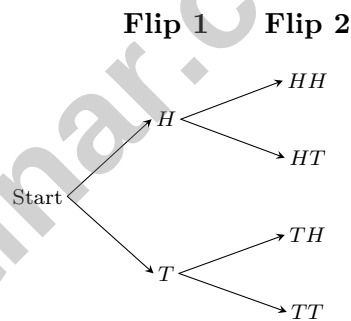
- ☐ A. 8 (constant, so linear) ☐ D. Cannot be determined without the x -values
☐ B. 5 (not constant, so nonlinear)
☐ C. The differences vary, so nonlinear

2) A line of best fit has equation $y = 3x + 2$. At what x -value is $y = 14$?

- ☐ A. $x = 3$ ☐ C. $x = 5$
☐ B. $x = 4$ ☐ D. $x = 6$

3) If a data set has mean = 50 and MAD = 0, which statement is true?

- ☐ A. All values equal 50 ☐ C. There are no values equal to 50
☐ B. The data is very spread out ☐ D. The smallest value is 50



4)

A tree diagram shows all possible outcomes when a coin is flipped twice. According to the diagram, how many total outcomes are there?

- ☐ A. 2 ☐ C. 4
☐ B. 6 ☐ D. 3



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- 5) A point on a coordinate grid is at distance $\sqrt{50}$ from the origin. If one coordinate is 5, what is the other coordinate?

- 6) If you divide an irrational number by a nonzero rational number, the result is:

- ☐ A. Always rational
☐ B. Could be either
☐ C. Always a whole number
☐ D. Always irrational

- 7) Write $0.\overline{8}$ as a fraction in simplest form.

- ☐ A. $\frac{1}{8}$
☐ B. $\frac{8}{10} = \frac{4}{5}$
☐ C. $\frac{8}{99}$
☐ D. $\frac{8}{9}$

- 8) Which product is irrational?

- ☐ A. $\sqrt{9} \times \sqrt{4}$
☐ B. $\sqrt{2} \times \sqrt{8}$
☐ C. $2 \times \sqrt{3}$
☐ D. $\sqrt{16} \times \sqrt{25}$

- 9) Which is the best estimate of $\sqrt{2}$?

- ☐ A. 1.2
☐ B. 2.8
☐ C. 2.0
☐ D. 1.4

- 10) Which loan has the lowest total repayment cost for \$3,000 principal?

- ☐ A. 6% for 2 years
☐ B. 5% for 3 years
☐ C. 4% for 4 years
☐ D. 3% for 5 years



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.B.7) When a transversal cuts two parallel lines, it creates 8 angles: 4 angles of measure 157° (corresponding and vertical angles) and 4 angles of measure 23° (supplements).
- 2) **Choice C is correct.** (8.EE.C) Substitute $x = 4 - y$ into $x + 3y = 8$: $(4 - y) + 3y = 8$, so $4 + 2y = 8$, giving $y = 2$. Then $x = 4 - 2 = 2$. Solution: $(2, 2)$.
- 3) **Choice A is correct.** (8.F.B.5) The graph rises from $(0, 2)$ to $(4, 5)$, then falls from $(4, 5)$ to $(6, 1)$. Its greatest y -value is 5, and the y -intercept is 2, so choice A is the only correct set.
- 4) **The correct answer is $m = 25$.** (8.EE.C.7) Add 2 to both sides: $\frac{m}{5} = 5$. Multiply both sides by 5: $m = 25$. Verify: $\frac{25}{5} - 2 = 5 - 2 = 3 \checkmark$.
- 5) **Choice B is correct.** (8.G.B.8, 8.G.B.7) From $(\sqrt{24})^2 + 1^2 = c^2$, we get $24 + 1 = 25$, so $c = \sqrt{25} = 5$.
- 6) **Choice A is correct.** (8.G.B.7) Circle area $= \pi r^2 = 3.14 \times 7^2 = 153.86 \text{ m}^2$. Square area $= 4 \times 4 = 16 \text{ m}^2$. Remaining $= 153.86 - 16 = 137.86 \text{ m}^2$.
- 7) **The correct answer is 5.** (8.EE.C.7) Solve $45 + 5q \geq 70$, giving $q \geq 5$. The minimum whole number is 5.
- 8) **Choice B is correct.** (8.G.A.4) Compute ratios of corresponding sides: $\frac{DE}{AB} = \frac{6}{3} = 2$, $\frac{DF}{AC} = \frac{8}{4} = 2$, $\frac{EF}{BC} = \frac{10}{5} = 2$. All ratios are constant ($= 2$), confirming similarity by SSS Similarity. Angles are also congruent in similar figures.
- 9) **Choice A is correct.** (8.G.B.8) The line is $x - 2y = 6$. Test origin: $0 - 0 = 0 \leq 6$ TRUE. So the origin is in the solution region with $\leq$.
- 10) **Choice A is correct.** (8.F.B.4) Slope is $m = \frac{11-5}{4-1} = \frac{6}{3} = 2$.
- 11) **Choice C is correct.** (8.G.A.5) Number of sides $= \frac{360}{18} = 20$.
- 12) **Choice B is correct.** (8.SP.A.3) The data shown covers speeds 1–5 mph. Predicting at 60 mph is extreme extrapolation, where the linear model's assumptions break down.
- 13) **Choice B is correct.** (8.NS.A.2) Two morning choices times three afternoon choices: $2 \times 3 = 6$ possible schedules.
- 14) **Choice C is correct.** (8.F.A.1) A point has one x -value with one y -value, so it passes the vertical line test. A vertical line is not a function (fails VLT). Circles and ellipses fail the VLT.
- 15) **Choice A is correct.** (8.F.A.2) β slope: $(6 - 12)/2 = -3$. Using $(0, 12)$: $\beta(x) = -3x + 12$. Same as α .
- 16) **Choice B is correct.** (8.G.A.2) Both reflection and rotation are rigid motions that preserve area. A sequence of rigid motions preserves the original area, so the final triangle has area 35 sq cm.
- 17) **Choice A is correct.** (8.G.A.3) Reflecting across the x -axis maps $(1, 2) \rightarrow (1, -2)$. Translating right 1 and up 1 gives $(2, -1)$, which is a vertex of the image. Checking the other vertices shows the same rule maps the whole rectangle correctly.
- 18) **Choice A is correct.** (8.G.A.5) Co-interior angles are supplementary: $(2x + 15) + (x + 45) = 180$, so $3x + 60 = 180$, giving $x = 40$.
- 19) **Choice B is correct.** (8.G.B.8) $d = \sqrt{(15 - 3)^2 + (19 - 4)^2} = \sqrt{12^2 + 15^2} = \sqrt{144 + 225} = \sqrt{369} \approx 19.2$ units. (Rounds to 19.)
- 20) **Choice B is correct.** (8.G.C.9) Volume of a pyramid: $V = \frac{1}{3} \cdot B \cdot h = \frac{1}{3} \times (6 \times 6) \times 9 = \frac{1}{3} \times 36 \times 9 = 108 \text{ in}^3$.
- 21) **The correct answer is A, B.** (8.EE.B.6) Options A and B both have slope 4, making them parallel. Option C has slope -4 , option D has slope $\frac{1}{4}$, and option E has slope 2, so none of these match.
- 22) **Choice A is correct.** (8.SP.A.1) Random scatter with no visible trend or pattern indicates no correlation between the two variables.
- 23) **The correct answer is 376.8.** (8.G.C.9) $V = \frac{1}{3} \times 3.14 \times 6^2 \times 10 = \frac{1}{3} \times 3.14 \times 36 \times 10 = \frac{1}{3} \times 1130.4 = 376.8 \text{ in}^3$.
- 24) **Choice C is correct.** (8.SP.A.4) Relative frequency among adults: $\frac{81}{108} = 0.75$. This is row-conditional.
- 25) **Choice C is correct.** (8.G.B.8) Absolute deviations: $|15 - 21| = 6$, $|18 - 21| = 3$, $|21 - 21| = 0$, $|24 - 21| = 3$, $|27 - 21| = 6$. Sum $= 18$. MAD $= 18/5 = 3.6$.
- 26) **Choice D is correct.** (8.G.B.7) $5 \times 4 \times 3 = 60$ different combinations.



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 7 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!

Give your child the confidence and skills they need with **7 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!

GRADE 8

Practice
Today
Succeed
Tomorrow!

Algebra

Geometry

Statistics

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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