

Rhode Island

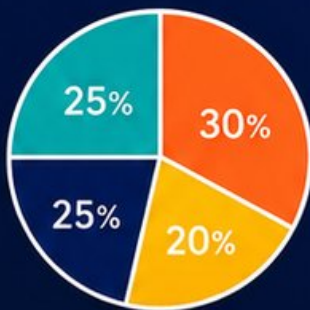
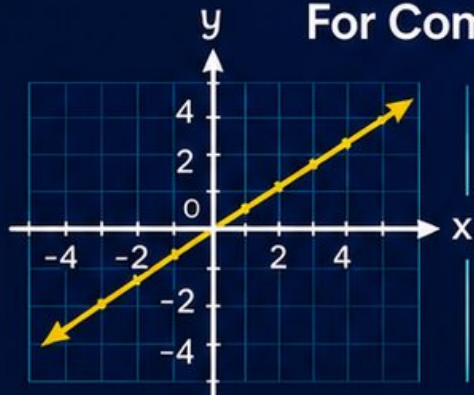
RICAS

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

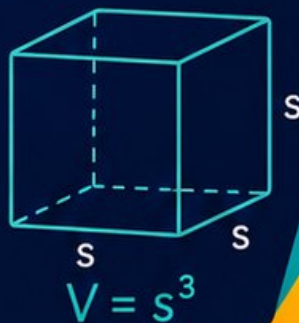


$$y = mx + b$$

$$2x - 3y = 6$$

$$\sqrt{x^2 + y^2}$$

$$A = bh$$



4 PRINTED TESTS



2 ONLINE TESTS



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



4 Rhode Island RICAS Grade 8 Math Practice Tests

Purposeful RICAS Prep with Review, Answer Keys, and Explanations



Four 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!

Four focused rounds for sharper RICAS math thinking

This book gives you four 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 four-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?

Four RICAS tests, 160 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–4	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.

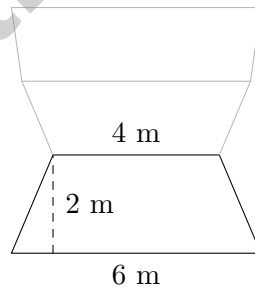


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& answers

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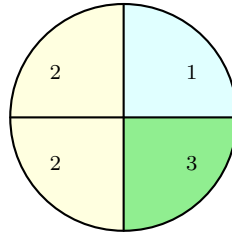
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- 1) The points $(0, 3)$, $(2, 7)$, and $(4, 11)$ are on the same line. What is the slope?
- ☐ A. 1 ☐ C. 3
☐ B. 4 ☐ D. 2
- 2) A trapezoid has a top base of 5 cm, a bottom base of 9 cm, and two equal legs. If the perimeter is 30 cm, what is the length of each leg?
- ☐ A. 6 cm ☐ C. 8 cm
☐ B. 7 cm ☐ D. 9 cm
- 3) A quadrilateral is rotated 90 degrees counterclockwise about a point. Which of the following is true about the rotated figure?
- ☐ A. The angles change ☐ D. The figure is similar but not congruent
☐ B. The side lengths change
☐ C. The figure is congruent to the original
- 4) A composite figure is made of three trapezoids stacked vertically. The first trapezoid has bases 4 m and 6 m with height 2 m. What is just this trapezoid's area?



- ☐ A. 8 m^2 ☐ C. 12 m^2
☐ B. 10 m^2 ☐ D. 16 m^2



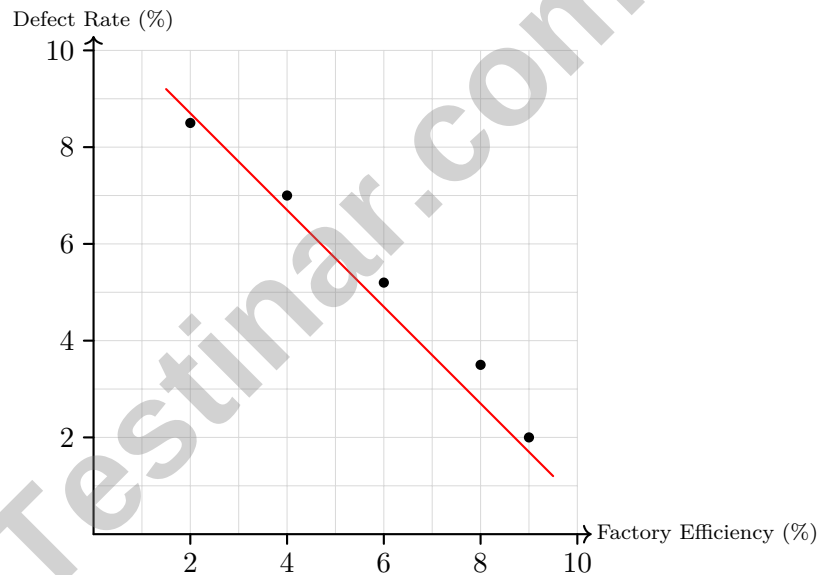


5)

The spinner has sections labeled 1, 2, 2, 3. What is the probability of landing on section 2?

- ☐ A. $\frac{1}{4}$
☐ B. $\frac{1}{3}$

- ☐ C. $\frac{1}{2}$
☐ D. $\frac{3}{4}$



6)

A factory tracks production efficiency versus defect rate. What does the strong negative slope tell you?

- ☐ A. Higher efficiency causes fewer defects
☐ B. As efficiency increases, the defect rate tends to decrease substantially
☐ C. Defects are always zero when efficiency is high
☐ D. The relationship is unrelated



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7) Triangle A has sides 5, 12, 13. Triangle B has sides 7.5, 18, 19.5. Triangle C has sides 10, 24, 26. Which triangles are similar to Triangle A ?

☐ A. Only Triangle B

☐ C. Both Triangle B and C

☐ B. Only Triangle C

☐ D. Neither Triangle B nor C

8) A table shows:

x	0	3	6
y	5	2	-1

What is the rate of change (slope)?

9) If $f(x) = |x - 2|$, what is $f(5)$?

☐ A. 3

☐ C. 7

☐ B. -3

☐ D. -7

10) What two positive integers multiply to 12 and add to 7?



1)

	M	F
Soccer	8	6
Tennis	5	7

The table shows the number of boys (M) and girls (F) who play soccer and tennis. If one student is selected at random, what is the probability that they play tennis?

☐ A. $\frac{6}{26}$

☐ C. $\frac{14}{26}$

☐ B. $\frac{5}{26}$

☐ D. $\frac{12}{26}$

2) A store notices that for every 2 customers who enter, 1 item is sold. What is the slope of items sold versus customers?

☐ A. 2

☐ C. 3

☐ B. $-\frac{1}{2}$

☐ D. $\frac{1}{2}$

3) A store has two types of mangoes. Premium mangoes cost \$2 each, standard mangoes cost \$1 each. A customer buys 15 mangoes for \$20. Solving the system $p + s = 15$ and $2p + s = 20$ gives $p = 5, s = 10$. Is this solution valid in the real world?

☐ A. No, because only the first equation is satisfied.

☐ C. Yes, because it represents a realistic purchase.

☐ B. No, because p is not a whole number.

☐ D. No, because the total cost should be higher.

4) Find $(1.2 \times 10^6) + (8 \times 10^5)$ in scientific notation.



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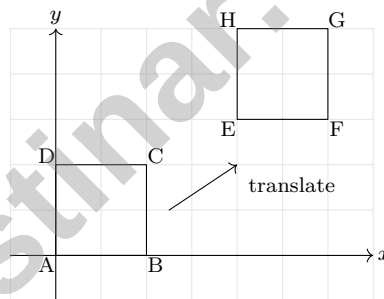
5) A baker tracks daily bread sales: $\{40, 45, 50, 55, 60\}$ loaves. Mean = 50. What is the MAD?

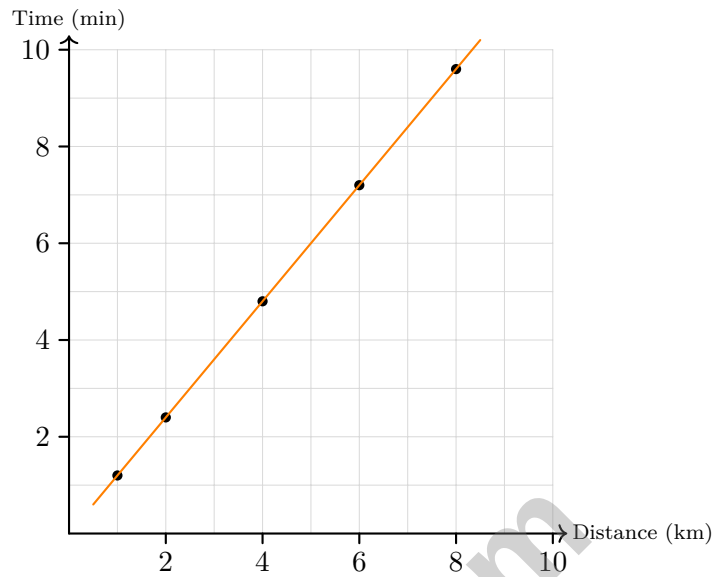
☐ A. 5☐ C. 6☐ B. 8☐ D. 10

6) Which scenario requires permutation (order matters)?

☐ A. Selecting 2 students from a group of 10 to form a study pair.☐ C. Picking 2 toppings from a pizza menu.☐ B. Arranging 2 students from a group of 10 in a line (first and second position).☐ D. Choosing 2 books to bring home from a library shelf.

7) Which sequence of rigid motions would map square ABCD onto square EFGH positioned elsewhere on the coordinate plane?

☐ A. Rotation only☐ C. Reflection and translation☐ B. Translation only☐ D. Dilation and rotation



1)

A delivery company tracks distance versus delivery time. The trend line shows an almost perfect fit with points nearly aligned. What can you conclude?

- | | |
|---|--|
| ☐ A. Distance and time are unrelated | ☐ C. The trend line should not be trusted |
| ☐ B. There is a strong linear relationship with very small residuals | ☐ D. The data contains measurement errors |

2) 3.2×10^{-3} equals:

- | | |
|-----------------------------------|------------------------------------|
| ☐ A. 3,200 | ☐ C. 0.0032 |
| ☐ B. 0.032 | ☐ D. 3.2 |

3) Factor completely: $x^3 + 5x^2$.

- | | |
|---|---|
| ☐ A. $x^2(x + 5)$ | ☐ C. $5x(x^2 + x)$ |
| ☐ B. $x(x^2 + 5x)$ | ☐ D. $x(x + 5)^2$ |



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- 4) A table of values for a linear relationship is partially filled:

x	2	5	8
y	3	?	15

What is the missing y -value?

- ☐ A. 8 ☐ C. 10
☐ B. 12 ☐ D. 9
- 5) A water tank contains saltwater at 2% concentration. To reduce the concentration to 1%, how much pure water must be added to 100 liters of the 2% solution?
- ☐ A. 50 L ☐ C. 100 L
☐ B. 75 L ☐ D. 150 L
- 6) A parking meter charges \$2.50 initial fee plus \$0.75 per hour. What is the hourly rate?



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 D is correct.** (8.EE.B.6) Using any two points: $\frac{7-3}{2-0} = \frac{4}{2} = 2$. Same slope for all pairs confirms collinearity.
- 2) **Choice C is correct.** (8.G.C) Perimeter = $5 + 9 + 2\ell = 30$, where ℓ is the length of each leg. So $14 + 2\ell = 30$, giving $\ell = 8$ cm.
- 3) **Choice C is correct.** (8.G.A.2) Rotation is a rigid motion, so it preserves all distances and angles. The rotated figure is congruent to the original.
- 4) **Choice B is correct.** (8.G.B.7) Trapezoid area = $\frac{1}{2}(b_1 + b_2) \times h = \frac{1}{2}(4 + 6) \times 2 = 10$ m².
- 5) **Choice C is correct.** (8.G.B.7) Section 2 appears twice out of four equal sections. $P(2) = \frac{2}{4} = \frac{1}{2}$.
- 6) **Choice B is correct.** (8.SP.A.2) A strong negative slope shows a strong inverse association: better efficiency correlates with fewer defects.
- 7) **Choice C is correct.** (8.G.A.4) For B: $\frac{7.5}{5} = \frac{18}{12} = \frac{19.5}{13} = 1.5$ (proportional). For C: $\frac{10}{5} = \frac{24}{12} = \frac{26}{13} = 2$ (proportional). Both are similar.
- 8) **The correct answer is -1.** (8.EE.B.5) Using (0, 5) and (3, 2): slope = $\frac{2-5}{3-0} = \frac{-3}{3} = -1$.
- 9) **Choice A is correct.** (8.F.A.1) Substitute $x = 5$: $f(5) = |5 - 2| = |3| = 3$.
- 10) **The correct answer is (3, 4).** (8.EE.C.7) The integers 3 and 4 multiply to 12 and add to 7.
- 11) **Choice C is correct.** (8.NS.A.1) $\sqrt{23}$ is irrational because 23 is not a perfect square. The other values are all rational: -4 is an integer, $\frac{7}{9}$ is a fraction, and $2.25 = \frac{9}{4}$ is a terminating decimal.
- 12) **Choice C is correct.** (8.NS.A.1) Let $x = 0.\overline{037}$. Then $1000x = 37.\overline{037}$. Subtracting: $999x = 37$, so $x = \frac{37}{999}$.
- 13) **Choice D is correct.** (8.NS.A.2) Since the square root function is increasing and $15 > 14$, we have $\sqrt{15} > \sqrt{14}$.
- 14) **Choice C is correct.** (8.NS.A.2) $\sqrt{50} = 5\sqrt{2} \approx 5 \times 1.41 = 7.07$, not 5.0. All other statements are accurate estimates.
- 15) **Choice D is correct.** (8.EE.A.3) A positive exponent shifts the decimal to the right. Move the decimal 2 places right: $3.8 \times 10^2 = 380$.
- 16) **Choice B is correct.** (8.G.C.9) Base area = $4^2 = 16$ cm². Four triangular faces each have area $\frac{1}{2}(4)(6) = 12$ cm², so the lateral area is 48 cm². Total surface area = $16 + 48 = 64$ cm².
- 17) **Choice A is correct.** (8.G.A.1) Step 1: Rotate 90° CCW: $(x, y) \rightarrow (-y, x)$. Step 2: Translate 3 units right (add 3 to x-coordinate): $(-y, x) \rightarrow (-y + 3, x)$.
- 18) **Choice D is correct.** (8.EE.C.7) Subtract $4x$ from both sides: $9 = 2$, which is false. This equation has no solution.
- 19) **Choice A is correct.** (8.EE.C.7) Add 3: $x > -4$. Open circle at -4 with right ray confirms this.
- 20) **Choice B is correct.** (8.G.B.8) SOLID line means the boundary is INCLUDED ($\leq$ or $\geq$). Shading to the LEFT means x values are at most 4, so $x \leq 4$.
- 21) **Choice B is correct.** (8.G.C.9) $V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times 3.14 \times 25 \times 18 = \frac{1}{3} \times 1413 = 471$ in³.
- 22) **The correct answer is B, E.** (8.EE.A.4) The product is $(4 \times 5) \times 10^{3+4} = 20 \times 10^7 = 2 \times 10^8$, so choices B and E are equivalent to the original expression. Choice A uses an exponent that is too large, and choices C and D have the wrong value.
- 23) **Choice B is correct.** (8.SP.A.3) Negative slope means as one variable increases, the other decreases. More training leads to fewer errors.
- 24) **The correct answer is 5.** (8.G.B.8) Absolute deviations: $|72 - 80| = 8$, $|78 - 80| = 2$, $|75 - 80| = 5$, $|81 - 80| = 1$, $|84 - 80| = 4$, $|90 - 80| = 10$. Sum = 30. MAD = $30/6 = 5$.
- 25) **Choice D is correct.** (8.G.B.7) Interest on Aiden's card: $I = 500 \times 0.18 \times 0.5 = \45 . Aiden now owes \$545; Bea has \$500. The credit card cost Aiden \$45 more than not using it.
- 26) **Choice D is correct.** (8.EE.A.1) When raising a power to another power, multiply exponents: $(y^4)^3 = y^{4 \cdot 3} = y^{12}$.
- 27) **Choice C is correct.** (8.EE.A.2) $18 \times 18 = 324$, so $\sqrt{324} = 18$.
- 28) **Choice D is correct.** (8.EE.B.5) $k = \frac{y}{x} = \frac{7}{2} = 3.5$. The line passes through (0, 0) and (2, 7).
- 29) **Choice D is correct.** (8.EE.C) When two equations represent the same line, every point on that line is a solution to the system. Therefore, there are infinitely many solutions.



Hi, Calm Solver!

◇ This carefully paced book gave you four steady 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!

Give your child the confidence and skills they need with **4 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!

4



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
- ✓ 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!



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+



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