

8

Rhode Island

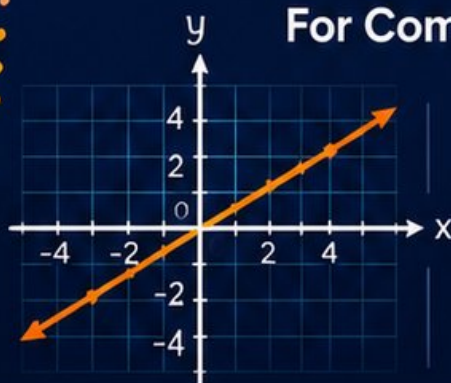
RICAS

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$A = \pi r^2$$

$$C = 2\pi r$$

$$V = \frac{1}{3}\pi r^2 h$$



$$V = \frac{1}{3}b^2 h$$



8 PRINTED TESTS



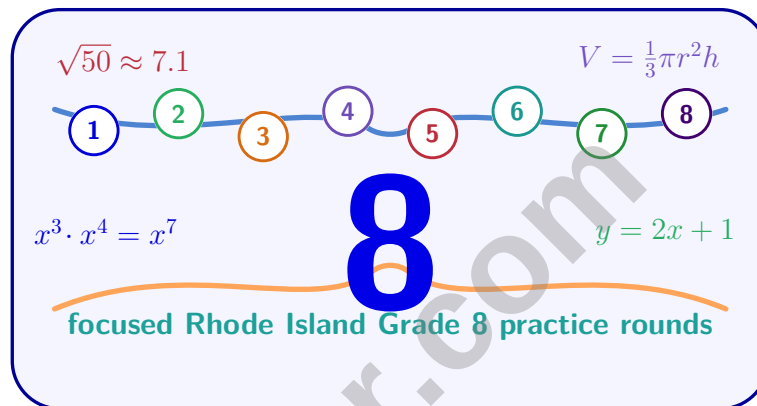
2 ONLINE TESTS



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

8 Rhode Island RICAS Grade 8 Math Practice Tests

Rhode Island Grade 8 Practice for Functions, Geometry, and Data



Eight 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!

Eight focused rounds for sharper RICAS math thinking

This book gives you eight 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

An eight-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?

Eight RICAS tests, 320 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 7–8	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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Table of Contents

★ Practice Test 1	_____	11
★ Practice Test 2	_____	27
★ Practice Test 3	_____	44
★ Practice Test 4	_____	59
★ Practice Test 5	_____	74
★ Practice Test 6	_____	90
★ Practice Test 7	_____	108
★ Practice Test 8	_____	124
Practice Test Answer Keys	_____	142
Practice Test Answers and Explanations	_____	147

1) Match each decimal to its fraction:

☐ A. $0.\overline{2} = \frac{2}{9}$ and $0.\overline{22} = \frac{22}{100}$

☐ B. $0.\overline{2} = \frac{2}{10}$ and $0.\overline{22} = \frac{22}{100}$

☐ C. $0.\overline{2} = \frac{1}{5}$ and $0.\overline{22} = \frac{11}{50}$

☐ D. $0.\overline{2} = \frac{2}{9}$ and $0.\overline{22} = \frac{22}{99}$

2) A table tracks 360 students by favorite subject and extracurricular club:

	Debate	Science	Total
Math	36	84	120
English	48	72	120
Science	60	60	120
Total	144	216	360

Among students in the Science club, what relative frequency prefer Math, as a decimal?

☐ A. $\frac{60}{360} = 0.167$

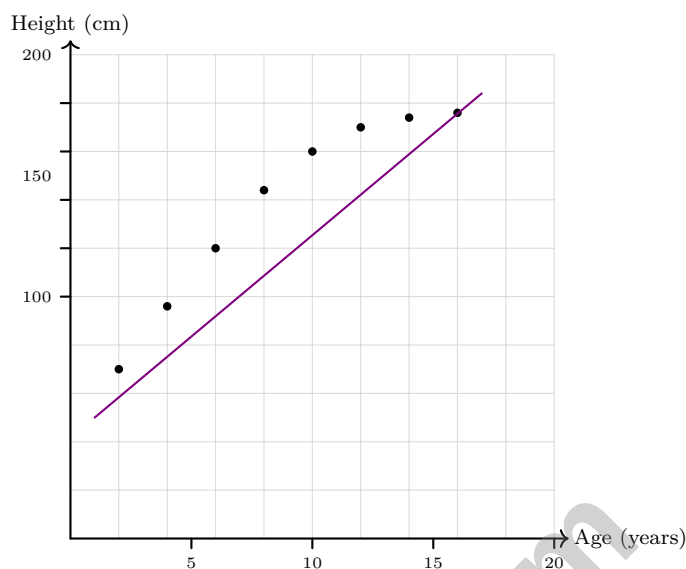
☐ B. $\frac{60}{120} = 0.50$

☐ C. $\frac{84}{216} \approx 0.39$

☐ D. $\frac{84}{360} \approx 0.23$



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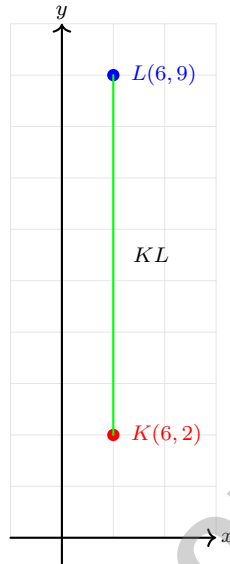
3)

Which statement best describes the trend shown in the scatter plot?

- ☐ A. There is no relationship between age and height
- ☐ B. Age determines height perfectly
- ☐ C. Height decreases as age increases
- ☐ D. Height increases rapidly with age up to about age 16, then levels off



- 4) On a coordinate plane, point $K = (6, 2)$ and point $L = (6, 9)$. What is KL ?

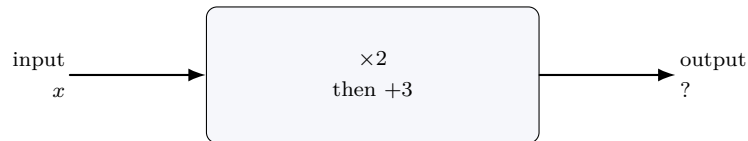


- ☐ A. 7
- ☐ B. 6
- ☐ C. $\sqrt{48}$
- ☐ D. 15
- 5) A student found the volume of a pyramid with base area 50 ft^2 and height 12 ft by calculating $V = 50 \times 12 = 600 \text{ ft}^3$. What is the correct volume?
- ☐ A. 100 ft^3
- ☐ B. 200 ft^3
- ☐ C. 300 ft^3
- ☐ D. 600 ft^3



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- 1) A function machine multiplies the input by 2 and adds 3. If the input is x , what is the output?



- ☐ A. $2x + 3$
☐ C. $3x + 2$
- ☐ B. $2(x + 3)$
☐ D. $x + 5$
- 2) Plant X : $H(d) = 2d + 10$ cm. Plant Y at days 0, 5, 10 has heights 15, 20, 25 cm. Which started taller?
- ☐ A. Plant X
☐ C. Both same.
- ☐ B. Plant Y
☐ D. Cannot be determined.
- 3) In a right triangle, one acute angle measures 38° . What is the measure of the other acute angle?
- ☐ A. 38°
☐ C. 52°
- ☐ B. 42°
☐ D. 90°
- 4) A school's two-way table tracks 420 students:

	Honors	Regular	Total
9th Grade	63	147	210
10th Grade	84	126	210
Total	147	273	420

What percentage of all students are 9th-graders in honors classes?

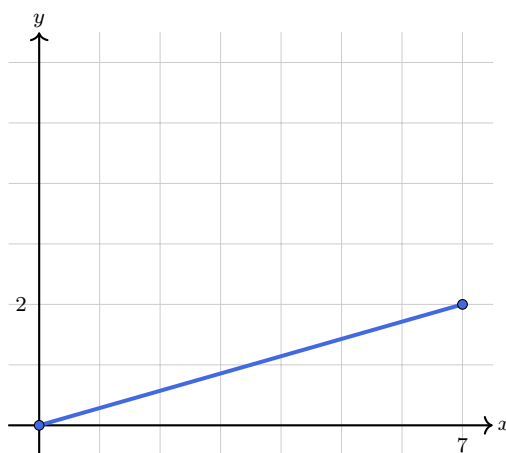
- ☐ A. $\approx 15\%$
☐ C. $\approx 30\%$
- ☐ B. $\approx 25\%$
☐ D. $\approx 35\%$



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- 5) When the correlation between two variables is weak, the trend line:
- ☐ A. Has a slope of zero
- ☐ B. Should not be used at all
- ☐ C. Will have large residuals and less reliable predictions
- ☐ D. Will be very accurate for predictions
- 6) A cylindrical paint can has radius 2.5 feet and height 3 feet. The paint covers only the curved side (lateral surface), not the top or bottom. Which expression gives the area that needs paint?
- ☐ A. $2\pi(2.5)^2 + 2\pi(2.5)(3)$
- ☐ B. $2\pi(2.5)(3)$
- ☐ C. $\pi(2.5)^2 + \pi(2.5)(3)$
- ☐ D. $(2.5)(3)$
- 7) A sphere and a cylinder both have radius 2 cm. The cylinder has height 8 cm. Which solid has greater volume? (Use $\pi \approx 3.14$.)
- ☐ A. Sphere ($\approx 33.49 \text{ cm}^3$)
- ☐ B. Cylinder ($\approx 100.48 \text{ cm}^3$)
- ☐ C. Both have equal volume
- ☐ D. Cannot determine from given data
- 8) The elevation rises 500 feet over a horizontal distance of 2000 feet. What is the slope?
-
- 9) The sum of two people's ages is 35. In 5 years, the older person will be twice the age of the younger person. If the younger person is currently y years old, find y .
-

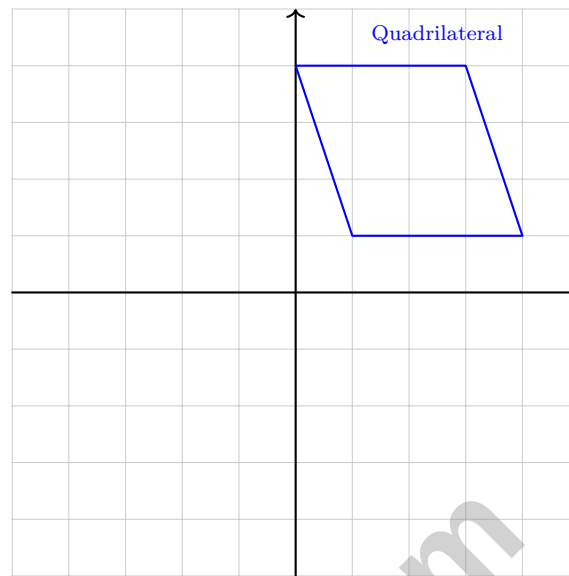




1)

The slope is approximately:

☐ A. 3.5☐ B. 0.43☐ C. 0.29☐ D. 2.86



2)

If the quadrilateral is translated 2 units left and 3 units down, what is the new position of the vertex originally at (4, 1)?

☐ A. (2, -2)☐ C. (2, 4)☐ B. (6, 4)☐ D. (1, 1)

3) The line $y = \frac{1}{3}x + k$ passes through the point (3, 5). What is the value of k ?

☐ A. 1☐ C. 3☐ B. 2☐ D. 4

4) A holiday savings club requires \$50 monthly deposits for 12 months with no interest. What is the total saved?



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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 D is correct.** **(8.NS.A.1)** $0.\overline{2} = \frac{2}{9}$ (1-digit repeat $\rightarrow 9$) and $0.\overline{22} = \frac{22}{99}$ (2-digit repeat $\rightarrow 99$).
- 2) **Choice C is correct.** **(8.SP.A.4)** Column-conditional frequency: among Science club (column total 216), Math-lovers are 84. Divide by column total, not row or grand total.
- 3) **Choice D is correct.** **(8.SP.A.2)** The data shows steep growth early, flattening near age 15–16. This reflects human biology: rapid growth during childhood and early teens, then plateauing as growth ends in adulthood.
- 4) **Choice A is correct.** **(8.G.B.8)** Since both points share $x = 6$, the distance is simply $|9 - 2| = 7$.
- 5) **Choice B is correct.** **(8.G.C.9)** The student forgot the $\frac{1}{3}$ factor. Correct: $V = \frac{1}{3} \times 50 \times 12 = 200 \text{ ft}^3$.
- 6) **Choice B is correct.** **(8.SP.A.1)** A U-shaped curve represents a nonlinear relationship. The direction changes, so it is not a simple linear correlation.
- 7) **The correct answer is 10.** **(8.F.A.2)** Car A travels 60 mph and Car B travels 50 mph, so the difference is 10 mph.
- 8) **Choice D is correct.** **(8.G.B.8)** If MAD = 0, every value must equal the mean exactly, which happens only when all values are the same.
- 9) **Choice A is correct.** **(8.G.B.7)** $P(\text{tails}) = \frac{1}{2}$; $P(5 \text{ or } 6) = \frac{2}{6}$. Product: $\frac{1}{2} \times \frac{2}{6} = \frac{2}{12} = \frac{1}{6}$.
- 10) **Choice C is correct.** **(8.NS.A.1)** For example, $\sqrt{2} \times \sqrt{8} = \sqrt{16} = 4$ (rational), but $\sqrt{2} \times \sqrt{3} = \sqrt{6}$ (irrational). So the product can be either.
- 11) **Choice D is correct.** **(8.NS.A.2)** Evaluate: $\sqrt[3]{8} = 2$, $\sqrt{5} \approx 2.24$, $\sqrt{15} \approx 3.87$. From the number line, order: $2 < 2.24 < 3.87$.
- 12) **Choice C is correct.** **(8.NS.A.2)** $\pi \approx 3.14159 \dots$, commonly estimated as 3.14 or 3.2 for Grade 8 work. Distractors: A (underestimate), B (rounds down), D (rounds up).
- 13) **The correct answer is (3, -5).** **(8.G.A.2)** A reflection across the x -axis changes the sign of the y -coordinate while keeping the x -coordinate the same. Thus, (3, 5) maps to (3, -5).
- 14) **Choice C is correct.** **(8.G.B.7)** Total amount to repay: \$10,000 (principal) + \$2,500 (interest) = \$12,500. Five equal annual payments: $\$12,500 / 5 = \$2,500$ per payment. After first payment of \$2,500, remaining owed is $\$12,500 - \$2,500 = \$10,000$.
- 15) **Choice D is correct.** **(8.EE.A.3)** Move the decimal 3 places right to get 7.2; the exponent is -3.
- 16) **Choice B is correct.** **(8.EE.B.6)** The slope is the coefficient of x . Only option B has a negative coefficient: -3.
- 17) **Choice A is correct.** **(8.EE.C.7)** Distribute: $6x - 3x - 6 = 3$. Combine: $3x - 6 = 3$. Add 6: $3x = 9$. Divide by 3: $x = 3$.
- 18) **Choice D is correct.** **(8.EE.C)** Substitute $y = -x + 7$ into $2x + y = 10$: $2x + (-x + 7) = 10$, so $x + 7 = 10$, giving $x = 3$. Then $y = -3 + 7 = 4$. Solution: (3, 4).
- 19) **The correct answer is B, C.** **(8.F.A.1)** Option B (parabola $y = x^2 + 2$): passes the vertical line test; each x gives one y —a function. Option C (horizontal line $y = 4$): passes the vertical line test; constant function—a function. Option A (circle): fails VLT; vertical lines intersect twice—not a function. Option D (sideways parabola $x = (y - 1)^2$): fails VLT; each $x > 0$ has two y -values—not a function. Option E (ellipse): fails VLT; vertical lines intersect twice—not a function.
- 20) **Choice A is correct.** **(8.EE.C.7)** Set up: $12 + 3t < 30$. Subtract 12: $3t < 18$. Divide by 3: $t < 6$ hours.
- 21) **Choice A is correct.** **(8.G.B.8)** Boundary points satisfy $3x - y = 9$. For (3, 0), $3(3) - 0 = 9$, so it is on the boundary. Because the inequality is strict, boundary points are not in the solution region.
- 22) **Choice A is correct.** **(8.F.A.3)** A straight line represents a linear function. A parabola (curved) represents a nonlinear function.
- 23) **Choice D is correct.** **(8.EE.A.1)** Numerator: $g^8 \cdot g^{-2} = g^6$. Then $\frac{g^6}{g^3} = g^3$.
- 24) **Choice D is correct.** **(8.EE.A.2)** $9 \times 9 \times 9 = 729$, so $\sqrt[3]{729} = 9$.
- 25) **Choice C is correct.** **(8.EE.A.4)** Divide coefficients: $8 \div 2 = 4$. Subtract exponents: $10^{-3 - (-7)} = 10^4$. Result: 4×10^4 .
- 26) **Choice C is correct.** **(8.EE.B.5)** $k = \frac{2}{8} = \frac{1}{4} = 0.25$.
- 27) **Choice C is correct.** **(8.EE.C.7)** Difference of squares: $x^2 - 25 = x^2 - 5^2 = (x + 5)(x - 5)$.



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Hi, Progress Maker!

◇ You have done more than complete a set of tests. You have rehearsed the habits that make Grade 8 math feel less surprising. ◇

★ **Remember this:** Progress is not always loud. Sometimes it looks like fewer careless errors, clearer work, better pacing, and more confidence when a problem is unfamiliar. You practiced across 8 full Grade 8 practice tests, and that repeated effort matters. ★

Signs of Growth

- **Clear Work:** Your steps are easier to follow.
- **Better Pacing:** You know when to move on and return.
- **Stronger Checks:** You catch mistakes earlier.
- **Calmer Thinking:** You know what to try next.

Grade 8 test-day tip: Keep one short list of mistakes you often make, then check that list before each practice session.

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

Jay Daie

Your Growth Coach

PRACTICE TODAY, SUCCEED TOMORROW!

Give your child the confidence and skills they need with **8 full-length Grade 8** Math practice tests that mirror real test formats and cover all key math standards. Perfect for building skills, strengthening problem-solving abilities, and achieving 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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Testinar

More Practice. More Confidence.
Better Results.