

3

Washington

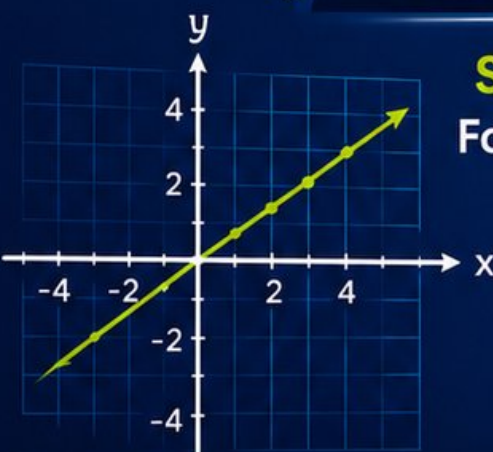
Smarter Balanced

GRADE 8

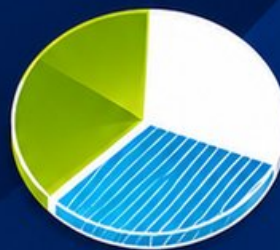
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$V = s^3$$



$$y = mx + b$$
$$2x + 5 = 13$$
$$x = 4$$



3 PRINTED TESTS



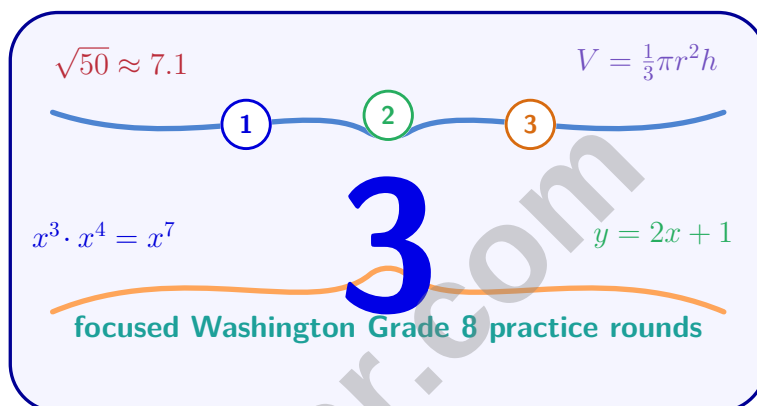
2 ONLINE TESTS



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

3 Washington Smarter Balanced Grade 8 Math Practice Tests

Grade 8 Washington Math Review for Skills, Stamina, and Strategy



Three complete 40-question Grade 8 Smarter Balanced 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, Washington Grade 8 Problem Solver!

Three focused rounds for sharper Smarter Balanced math thinking

This book gives you three full Grade 8 Smarter Balanced 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 Washington 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 three-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.

Washington 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?

Three Smarter Balanced tests, 120 questions, and a focused review path

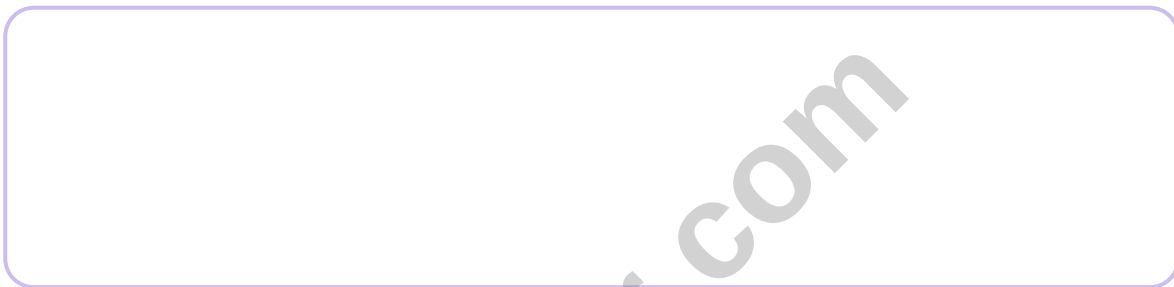
Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Test 3	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

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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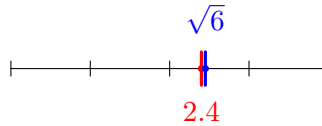
Table of Contents



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Perfect Squares: $2^2 = 4$, $3^2 = 9$

Compare to $\sqrt{6}$ and 2.4



1)

Is $\sqrt{6}$ greater than 2.4 or less than 2.4?

☐ A. Cannot compare

☐ C. Equal to

☐ B. Less than

☐ D. Greater than

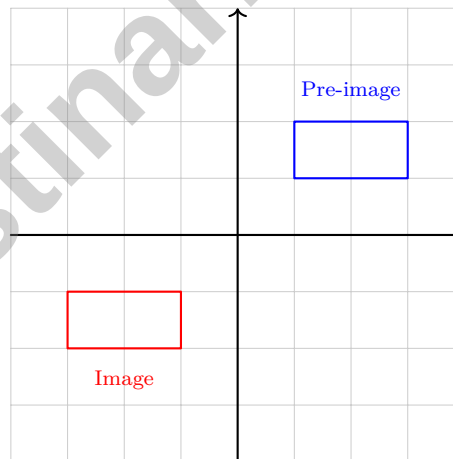
2) A square pyramid has a base with side length 8 cm and height 3 cm. Approximate the slant height and then calculate the surface area. (Use $\sqrt{25} = 5$.)

☐ A. Slant height ≈ 5 cm, SA ≈ 129 cm²

☐ C. Slant height ≈ 4 cm, SA ≈ 113 cm²

☐ B. Slant height ≈ 5 cm, SA ≈ 144 cm²

☐ D. Slant height ≈ 6 cm, SA ≈ 161 cm²



3)

Looking at the two rectangles, which transformation was applied?

☐ A. Reflection across the x -axis

☐ C. 180° rotation about the origin

☐ B. Reflection across the y -axis

☐ D. Dilation by scale factor 2



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4) A line has equation $y = \frac{3}{2}x + 5$. Which statement is true?

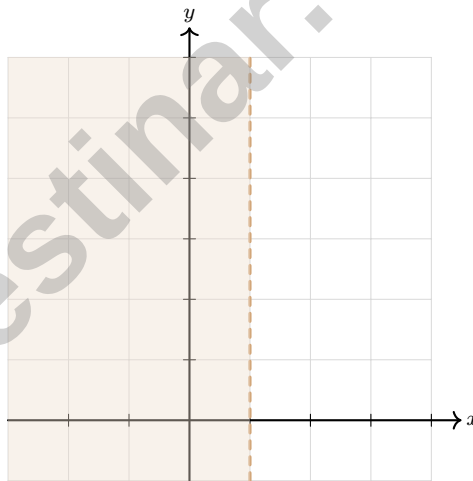
- ☐ A. The line has slope 5 and passes through $(0, \frac{3}{2})$
- ☐ B. The line is perpendicular to $y = \frac{2}{3}x + 1$
- ☐ C. The line has y -intercept $\frac{3}{2}$
- ☐ D. The line passes through $(2, 8)$

5) Solve for x : $6x + 2 = 5x + 9$

- ☐ A. $x = 7$
- ☐ B. $x = -7$
- ☐ C. $x = 11$
- ☐ D. $x = 2$

6) Solve: $3(x + 2) < 9$

- ☐ A. $x < 1$
- ☐ B. $x > 1$
- ☐ C. $x < 3$
- ☐ D. $x > 3$



7)

The graph shows which inequality?

- ☐ A. $x < 1$
- ☐ B. $x > 1$
- ☐ C. $x \leq 1$
- ☐ D. $x \geq 1$



8) The best-fit line for a summer temperature study is $T = 1.2m + 68$, where T is temperature in $^{\circ}\text{F}$ and m is the month number (with month 1 = June). What does the intercept of 68 represent in this context?

- ☐ A. The predicted temperature at month 0 (an extrapolated value)
 ☐ C. The maximum temperature observed
☐ B. The temperature increase per month
 ☐ D. The rate of temperature change

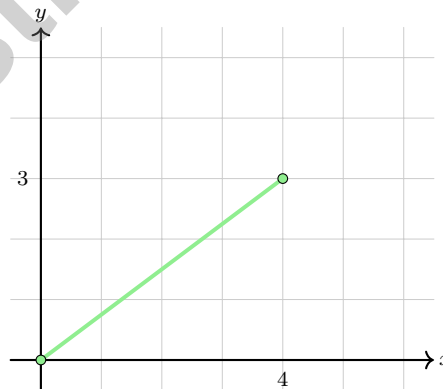
9) Which number is closest to $\sqrt{50}$?

- ☐ A. 6
 ☐ C. 7.1
☐ B. 7
 ☐ D. 9

10) A student multiplies $(3.5 \times 10^4) \times (2 \times 10^3)$ and gets 7×10^7 . Which is true?

- ☐ A. The exponents should be multiplied to get 10^{12} .
 ☐ C. The student is correct.
☐ B. The coefficient is wrong; should multiply as $3.5 \times 2 = 7$, not separate.
 ☐ D. The coefficient should be changed to 0.7.

11)



The equation of the line is:

- ☐ A. $y = 3x$
☐ C. $y = \frac{3}{4}x$
☐ B. $y = \frac{4}{3}x$
☐ D. $y = 4x$



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1) What is the range of $\{(-1, 4), (-3, -2), (0, 4), (2, 7), (3, -2)\}$?

☐ A. $\{-3, -1, 0, 2, 3\}$

☐ C. $\{-2, 4\}$

☐ B. $\{-2, 4, 7\}$

☐ D. $\{-1, 0, 2, 3\}$

2) Convert $0.\overline{7}$ to a fraction. Which step is incorrect?

☐ A. Let $x = 0.\overline{7}$.

☐ C. $10x - x = 7.\overline{7} - 0.\overline{7} = 7$ is wrong; should be 0.7.

☐ B. $10x = 7.\overline{7}$.

☐ D. $9x = 7$, so $x = \frac{7}{9}$.

3) A worker receives a paycheck with gross pay of \$2,000, federal tax withholding of \$240, and FICA tax of \$160. What is the net pay?

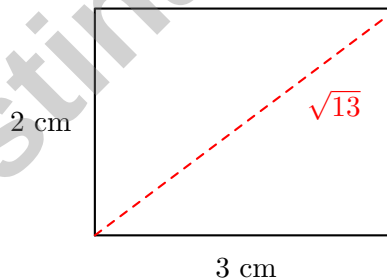
☐ A. \$2,000

☐ C. \$1,840

☐ B. \$1,760

☐ D. \$1,600

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 strand of DNA has width 2.0×10^{-9} m. Convert to standard form.

☐ A. 2,000,000,000 m

☐ C. 0.00000002 m

☐ B. 0.000000002 m

☐ D. 0.0000000002 m

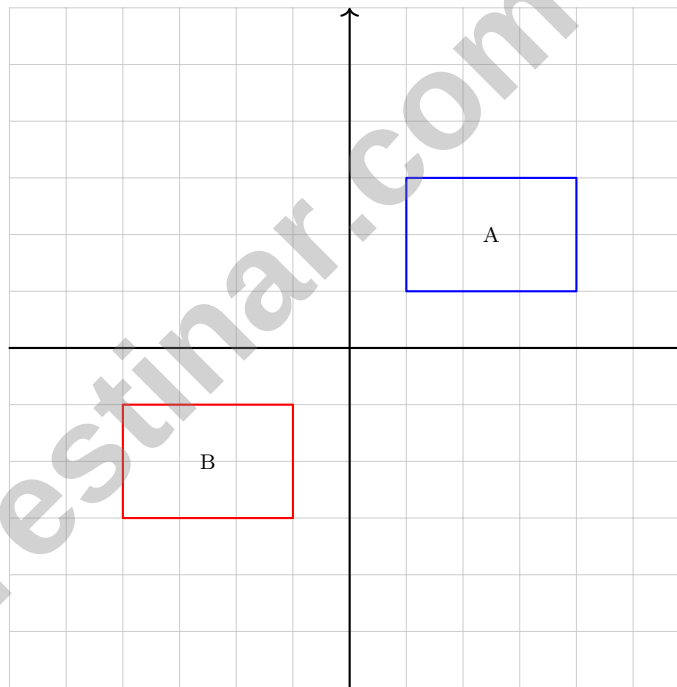
6) A rectangular pyramid (not square) has a rectangular base with dimensions $5 \text{ m} \times 3 \text{ m}$. The slant heights are 8 m (for the pair of triangular faces on the longer base edges) and 7 m (for the pair on the shorter edges). What is the lateral surface area?

☐ A. $40 + 30 = 70 \text{ m}^2$

☐ C. 100 m^2

☐ B. $2 \times \frac{1}{2}(5)(8) + 2 \times \frac{1}{2}(3)(7) = 61 \text{ m}^2$

☐ D. 120 m^2



7)

Figure A is transformed to Figure B. Which single transformation is shown?

☐ A. Reflection across the x -axis only

☐ C. 180° rotation about the origin

☐ B. Reflection across the y -axis only

☐ D. Dilation by scale factor 2



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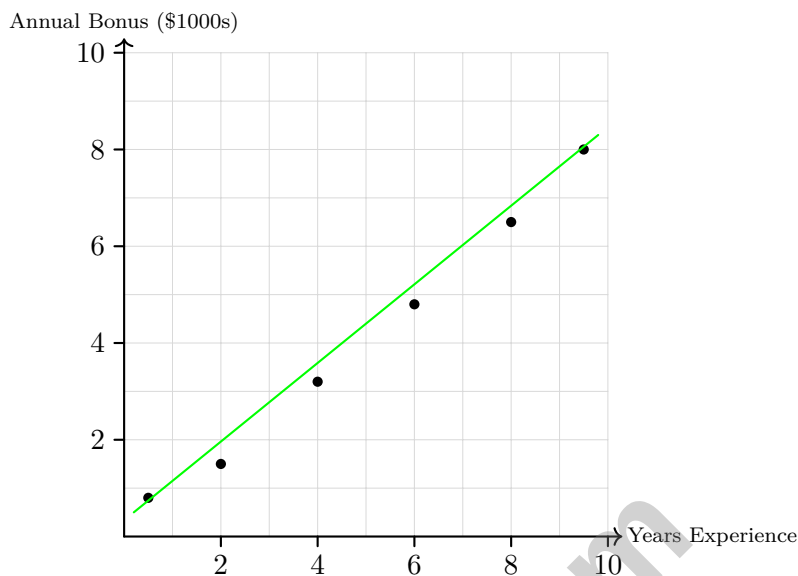
- 1) A bakery's two-way table shows 300 purchases by time and product type. Morning purchases: 120 bread, 80 pastries. Afternoon purchases: 60 bread, 40 pastries. What is the marginal relative frequency for pastries, rounded to the nearest hundredth?

	Bread	Pastries	Total
Morning	120	80	200
Afternoon	60	40	100
Total	180	120	300

- ☐ A. 0.27 ☐ C. 0.40
☐ B. 0.33 ☐ D. 0.47
- 2) 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 .



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& answers



3)

An employee compensation analysis shows experience versus bonuses. If the trend line predicts a \$3,000 bonus at 4 years of experience, and an employee with 4 years actually gets \$3,500, what is the residual?

☐ A. -500☐ C. 3000☐ B. 500☐ D. 3500

4) A dilated figure has a side length of 12 cm and was created with a scale factor of 1.5 from the original. What was the original side length?

$$\underline{\text{? cm}} \xrightarrow{k = 1.5} \underline{12 \text{ cm}}$$

☐ A. 8 cm☐ C. 6 cm☐ B. 18 cm☐ D. 13.5 cm

Washington Smarter Balanced 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 Washington Smarter Balanced 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.2) $(2.4)^2 = 5.76 < 6$, so $2.4 < \sqrt{6}$. Therefore $\sqrt{6}$ is greater than 2.4.
- 2) **Choice B is correct.** (8.G.C.9) The distance from the center to the midpoint of a base edge is 4 cm. Slant height $\ell = \sqrt{3^2 + 4^2} = \sqrt{25} = 5$ cm. Base area = 64 cm^2 and lateral area = $4 \times \frac{1}{2}(8)(5) = 80 \text{ cm}^2$, so total surface area is 144 cm^2 .
- 3) **Choice C is correct.** (8.G.A.1) A 180° rotation about the origin maps $(x, y) \rightarrow (-x, -y)$. The pre-image at $(1, 1)$ maps to $(-1, -1)$ in the image, confirming the rotation.
- 4) **Choice D is correct.** (8.EE.B.6) Check $(2, 8)$: $\frac{3}{2}(2) + 5 = 8$, so the point lies on the line. The slope is $\frac{3}{2}$ and the y -intercept is 5; a perpendicular line would have slope $-\frac{2}{3}$, not $\frac{2}{3}$.
- 5) **Choice A is correct.** (8.EE.C.7) Subtract $5x$ and 2: $x = 7$.
- 6) **Choice A is correct.** (8.EE.C.8b) Distribute: $3x + 6 < 9$. Subtract 6: $3x < 3$. Divide by 3: $x < 1$.
- 7) **Choice A is correct.** (8.EE.C.8b) Dashed vertical line at $x = 1$ with shading to the LEFT means $x < 1$.
- 8) **Choice A is correct.** (8.SP.A.3) The y -intercept (68) is the predicted value when $m = 0$. Since month 0 is outside the observed summer data range, this is an extrapolation used to define the line mathematically.
- 9) **Choice C is correct.** (8.EE.A.2) $7^2 = 49$ and $8^2 = 64$, so $\sqrt{50}$ is a little more than 7. Since $\sqrt{50} \approx 7.07$, it is closest to 7.1.
- 10) **Choice C is correct.** (8.EE.A.4) $3.5 \times 2 = 7$ and $10^{4+3} = 10^7$, giving 7×10^7 . The coefficient 7 is already in standard form $[1, 10]$, so no renormalization is needed.
- 11) **Choice C is correct.** (8.EE.B.5) Slope $k = \frac{3}{4}$. Line passes through origin and $(4, 3)$, so $y = \frac{3}{4}x$.
- 12) **Choice C is correct.** (8.EE.C.8a) Both equations have slope 2. If $c \neq 3$, the lines are parallel and have no solution. If $c = 3$, the equations are identical and there are infinitely many solutions.
- 13) **Choice A is correct.** (8.F.A.2) Rate of A: $(5 - 2)/(1 - 0) = 3$. Rate of B: $(1 - (-1))/(1 - 0) = 2$. Since $3 > 2$, A is greater.
- 14) **Choice C is correct.** (8.F.A.3) In $y = 2^x$, x is an exponent (not the variable being exponentiated). This is an exponential function, not linear. Linear requires $y = mx + b$ form.
- 15) **Choice B is correct.** (8.F.B.4) Current value \$18,000 (intercept). Depreciates (decreases) by \$2000 per year (negative slope). Equation: $V = -2000t + 18000$.
- 16) **Choice A is correct.** (8.F.B.5) The graph is flat at 5 liters from hour 3 to hour 5, a duration of 2 hours.
- 17) **Choice C is correct.** (8.G.A.2) Perimeter = $13 + 13 + 10 = 36$ cm. Triangle 2 is congruent, so it has the same perimeter.
- 18) **Choice B is correct.** (8.G.A.3) The point $(1, 1)$ maps to $(-1, 1)$, and $(2, 2)$ maps to $(-2, 2)$. This is reflection across the y -axis: $(x, y) \rightarrow (-x, y)$.
- 19) **Choice A is correct.** (8.G.A.5) Angle 1 (63°) and angle 2 (95°) form a triangle with angle 3. The angle corresponding to angle 1 (by the parallel line property) is 63° . Then by triangle angle sum: angle 3 = $180 - 63 - 95 = 22^\circ$.
- 20) **The correct answer is 3.33×10^5 .** (8.EE.A.3) Divide: $\frac{2 \times 10^{30}}{6 \times 10^{24}} = \frac{2}{6} \times 10^6 = \frac{1}{3} \times 10^6 \approx 3.33 \times 10^5$.
- 21) **The correct answer is A, C.** (8.NS.A.1) $\sqrt{169} = 13$ is rational (perfect square). The repeating decimal $0.777\ldots = \frac{7}{9}$ is rational. The other values are irrational: $\sqrt{170}$ (non-perfect square), 2π (irrational multiple of π), and $\sqrt{2} + 1$ (irrational plus rational is irrational).
- 22) **The correct answer is $\frac{53}{90}$.** (8.NS.A.1) Set $x = 0.5\bar{8} = 0.5888\ldots$. Then $10x = 5.\bar{8}$ and $100x = 58.\bar{8}$. Subtracting: $90x = 53$, so $x = \frac{53}{90}$.
- 23) **Choice B is correct.** (8.G.B.6, 8.G.B.7) The 5-12-13 triple applies: $5^2 + h^2 = 13^2$ gives $25 + h^2 = 169$, so $h = 12$ feet.
- 24) **Choice C is correct.** (8.G.B.8) $d = \sqrt{24^2 + 7^2} = \sqrt{576 + 49} = \sqrt{625} = 25$ units. (This is a 7-24-25 Pythagorean triple.)
- 25) **Choice B is correct.** (8.G.C.9) Sphere: $V_s = \frac{4}{3}\pi r^3$. Cylinder: $V_c = \pi r^2(2r) = 2\pi r^3$. Ratio: $\frac{V_c}{V_s} = \frac{2\pi r^3}{\frac{4}{3}\pi r^3} = \frac{2 \times 3}{4} = 1.5$.



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Hi, Grade 8 Math Star!

◇ You finished this practice set with real effort. Grade 8 math asks you to connect ideas, explain your thinking, and stay steady through multi-step problems. ◇

★ **Remember this:** Every page you completed helped build stronger habits: reading carefully, choosing a method, showing work, and checking whether the answer makes sense. You practiced across 3 full Grade 8 practice tests, and that repeated effort matters. ★

What You Built

- **Focus:** You stayed with challenging questions.
- **Accuracy:** You learned to slow down when details matter.
- **Reasoning:** You practiced explaining why a method works.
- **Readiness:** You are more prepared than when you started.

Grade 8 test-day tip: Before test day, review the questions that made you pause. Those are the best teachers.

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

Jay Daie

Your Grade 8 Math Friend

PRACTICE TODAY, ACHIEVE TOMORROW!

GRADE
8

Give your child the edge they need with **3 full-length** Grade 8 Math practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, boosting confidence, and preparing for 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!

Use these two additional online practice tests for extra review after the printed tests.

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PRACTICE. PREPARE. SUCCEED.



Testinar

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