

9

West Virginia

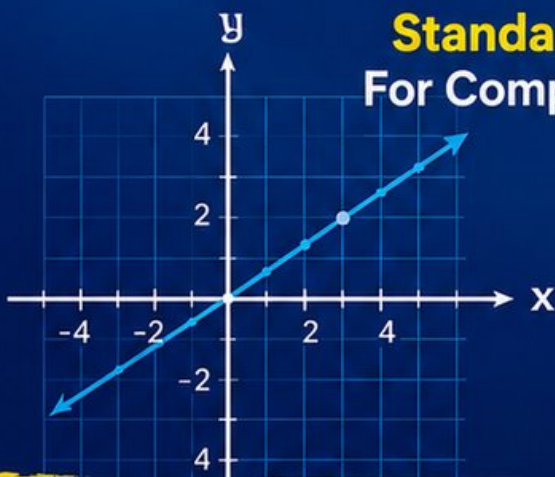
WVGSA

Grade 8

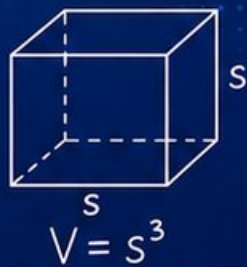
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$2x + 3y = 12$$
$$y = mx + b$$



9 PRINTED
TESTS

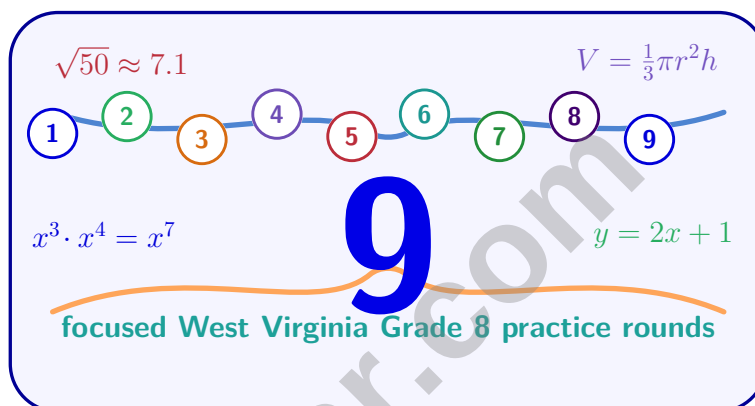


2 ONLINE
TESTS

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

9 West Virginia WVGSA Grade 8 Math Practice Tests

West Virginia Grade 8 Math Practice for Equations, Graphs, Geometry, and Data Skills



Nine complete 40-question Grade 8 WVGSA 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, West Virginia Grade 8 Problem Solver!

Nine focused rounds for sharper WVGSA math thinking

This book gives you nine full Grade 8 WVGSA 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 West Virginia 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 nine-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.

West Virginia 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?

Nine WVGSA tests, 360 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 7–9	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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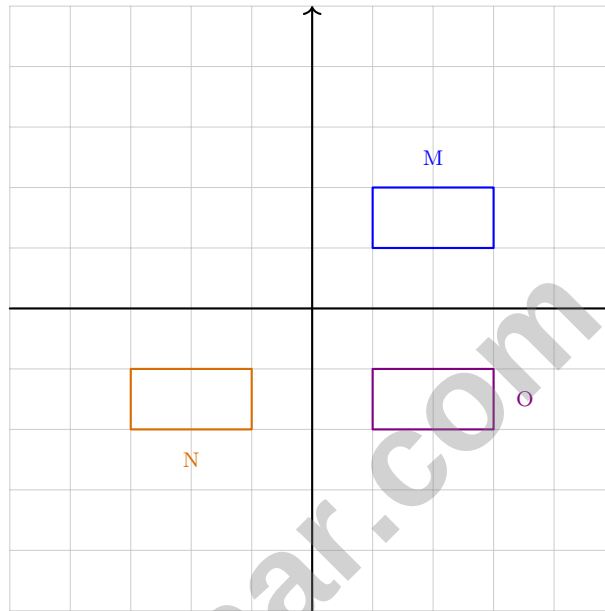
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1) Which fraction equals $0.\overline{12}$?

- ☐ A. $\frac{12}{100}$
☐ B. $\frac{1}{12}$

- ☐ C. $\frac{12}{90}$
☐ D. $\frac{12}{99} = \frac{4}{33}$



2)

If M is the original figure, which statement is true?

- ☐ A. M to N is a translation; M to O is a reflection
☐ B. M to N is a reflection; M to O is a translation
☐ C. M to N is a 180° rotation; M to O is a reflection across the x -axis
☐ D. Both N and O are obtained by rotations only

3) A laptop costs \$1,200 cash. The store's installment offer is \$110/month for 12 months. Which analysis correctly explains why someone might choose installments despite the extra cost?

- ☐ A. Installments save money (\$120 is refunded later)
☐ B. The store benefits, so customers should too
☐ C. Installments are always cheaper than paying cash
☐ D. The customer doesn't have \$1,200 cash now but can afford \$110/month



4) Consider the equation $3x + 7 = 3x + 2$. How many solutions does this have?

- ☐ A. One solution
☐ B. Cannot be determined
☐ C. Infinitely many solutions
☐ D. No solution

5) Identify the system with no solution.

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

6) Solve: $5 - x > 8$

- ☐ A. $x > -3$
☐ B. $x > 13$
☐ C. $x < -3$
☐ D. $x < 13$

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

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

8) Explain why 10^5 is 100 times greater than 10^3 . Use exponents in your reasoning.

9) Rewrite $3x - 2y < 6$ in slope-intercept form. Which inequality is equivalent?

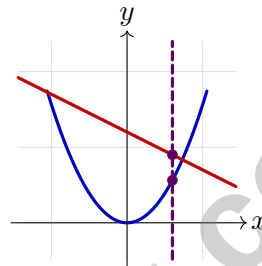
- ☐ A. $y > \frac{3}{2}x - 3$
☐ B. $y < \frac{3}{2}x - 3$
☐ C. $y \geq \frac{3}{2}x - 3$
☐ D. $y \leq \frac{3}{2}x - 3$



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- 10) Convert $0.454545\dots$ to a fraction in simplest form.

- 11) Two curves are drawn on the same coordinate plane. The first curve is a parabola, and the second is a straight line (not vertical). How many times will a vertical line intersect both curves combined?



- ☐ A. At most twice (once per curve). ☐ C. At most three times.
☐ B. Exactly once. ☐ D. More than four times.
- 12) Distance traveled: Function $d_1(t) = 55t$ miles (constant speed). Function d_2 at hours $(0, 0)$, $(3, 180)$. After 6 hours, which distance greater?

- ☐ A. d_1 ☐ C. Same distance
☐ B. d_2 ☐ D. Cannot determine
- 13) Which equation is LINEAR?

- ☐ A. $y = \frac{7}{2}x - 6$ ☐ C. $y = 2^x$
☐ B. $y = x(x - 1)$ ☐ D. $y = \frac{4}{x-1}$



1) An athlete drinks 8 ounces of water for every 10 minutes of exercise. After 45 minutes of exercise, how many ounces has the athlete drunk?

☐ A. 30 ounces

☐ C. 40 ounces

☐ B. 45 ounces

☐ D. 36 ounces

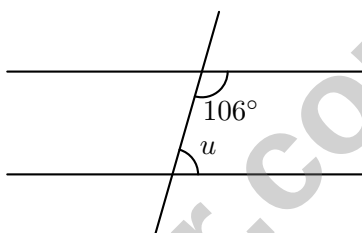
2) A baker tracks daily bread sales: $\{40, 45, 50, 55, 60\}$ loaves. Mean = 50. What is the MAD?

☐ A. 5

☐ C. 6

☐ B. 8

☐ D. 10



3)

Two parallel lines are cut by a transversal. Angles u and 106° are co-interior angles. What is u ?

☐ A. 74°

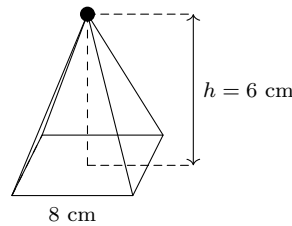
☐ C. 148°

☐ B. 106°

☐ D. 180°



- 4) The square pyramid below has a base edge of 8 cm and a height of 6 cm.



What is the volume of the pyramid?

- ☐ A. 64 cm^3 ☐ C. 256 cm^3
☐ B. 128 cm^3 ☐ D. 384 cm^3
- 5) Which of the following would most likely show a nonlinear association?
- ☐ A. Study time versus test score ☐ C. Age versus income
☐ B. Temperature versus ice cream sales ☐ D. Dosage versus drug effectiveness
- 6) The height of a ball (in meters) t seconds after being thrown is $h(t) = 20t - 5t^2$. Find $h(2)$.

- 7) A survey measured the relationship between study time (hours) and test score. The best-fit line is $S = 5t + 60$, where S is the score and t is study time in hours. What is the predicted score if a student studies for 8 hours?
- ☐ A. 68 ☐ C. 120
☐ B. 85 ☐ D. 100



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1) What is $\sqrt[3]{216}$?

☐ A. 5

☐ C. 7

☐ B. 8

☐ D. 6

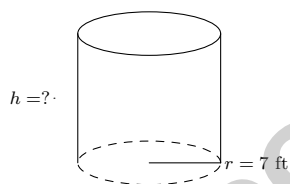
2) A rectangular prism has length $\frac{3}{2}$ ft, width 1 ft, and height $\frac{1}{2}$ ft. What is its surface area?

☐ A. $\frac{11}{4}$ ft²

☐ C. 7 ft²

☐ B. $\frac{11}{2}$ ft²

☐ D. $\frac{15}{2}$ ft²



3)

A cylinder has radius 7 ft and volume 969.84 ft³. What is its height? (Use $\pi \approx 3.14$.)

☐ A. 6.3 ft

☐ C. 10 ft

☐ B. 8 ft

☐ D. 12 ft

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

☐ A. 12×10^{-5}

☐ C. 3×10^5

☐ B. 8×10^{-5}

☐ D. 3×10^{-5}

5) Which equation is LINEAR?

☐ A. $y = 3x^2$

☐ C. $y = 6x - 9$

☐ B. $y = \frac{2}{x}$

☐ D. $y = \sqrt{2x}$



6) Which table represents the linear function $y = 4x - 2$?

☐ A.

x	y
0	-2
1	2
2	6

☐ B.

x	y
0	4
1	5
2	6

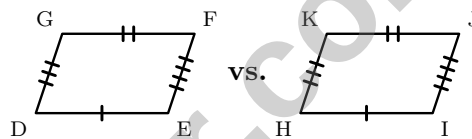
☐ C.

x	y
0	2
1	6
2	10

☐ D.

x	y
0	0
1	4
2	8

7) Quadrilateral DEFG is congruent to quadrilateral HIJK. A student wrote $DEFG \cong IJKH$. Which error did the student make?



- ☐ A. $DEFG \cong HIJK$ (correct order) ☐ C. $DEFG \cong KJHI$ (wrong order)
☐ B. $DEFG \cong IJKH$ (wrong vertex order) ☐ D. $DEFG \cong IHKJ$ (completely wrong)



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West Virginia WVGSA 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 West Virginia WVGSA practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice D is correct.** (M.8.19) Let $x = 0.\overline{12}$. Then $100x = 12.\overline{12}$. Subtracting: $99x = 12$, so $x = \frac{12}{99} = \frac{4}{33}$.
- 2) **Choice C is correct.** (M.8.19) A 180° rotation maps each point (x, y) to $(-x, -y)$, producing N. A reflection across the x -axis maps (x, y) to $(x, -y)$, producing O.
- 3) **Choice D is correct.** (M.8.25) Total with installments: $110 \times 12 = \$1,320$ (cost is \$120 extra). Someone might choose this if they lack \$1,200 upfront but have steady monthly income. This illustrates the trade-off between affordability and cost.
- 4) **Choice D is correct.** (M.8.9) Subtract $3x$: $7 = 2$, which is false. No value of x satisfies this equation.
- 5) **Choice A is correct.** (M.8.10) These lines have the same slope ($\frac{1}{2}$) but different y -intercepts (1 and -3), making them parallel with no intersection.
- 6) **Choice C is correct.** (M.8.12) Subtract 5: $-x > 3$. Multiply by -1 (FLIP): $x < -3$.
- 7) **Choice A is correct.** (M.8.9) GCF is x^2 : $x^3 + 5x^2 = x^2(x + 5)$.
- 8) **The correct answer is 100.** (M.8.5) When dividing powers with the same base, subtract the exponents. $10^{5-3} = 10^2$, and $10^2 = 100$, so 10^5 is 100 times larger than 10^3 .
- 9) **Choice A is correct.** (M.8.26) Subtract $3x$ from both sides: $-2y < -3x + 6$. Divide by -2 (flip inequality): $y > \frac{3}{2}x - 3$.
- 10) **The correct answer is $\frac{5}{11}$.** (M.8.1) Let $x = 0.454545\dots$. Then $100x = 45.454545\dots$, so $99x = 45$ and $x = \frac{45}{99} = \frac{5}{11}$.
- 11) **Choice A is correct.** (M.8.14) A parabola passes the vertical line test (one intersection per vertical line). A non-vertical line also passes the vertical line test. A vertical line can intersect each at most once, for a total of at most two intersections.
- 12) **Choice B is correct.** (M.8.2) $d_1(6) = 55(6) = 330$ miles. Slope of d_2 : $180/3 = 60$ mph, so $d_2(6) = 0 + 60(6) = 360$ miles. Since $360 > 330$, d_2 is greater.
- 13) **Choice A is correct.** (M.8.14) $y = \frac{7}{2}x - 6$ is linear with slope $\frac{7}{2}$ and y -intercept -6 . Option B expands to $y = x^2 - x$ (nonlinear), and C and D are exponential and rational functions.
- 14) **Choice A is correct.** (M.8.17) Initial altitude is 200 cm (intercept). Altitude decreases by 5 cm per second (negative slope). Equation: $h = -5t + 200$.
- 15) **Choice A is correct.** (M.8.20) The vertices must be listed in corresponding order. The matching arcs and tick marks show $J \leftrightarrow M$, $K \leftrightarrow N$, and $L \leftrightarrow O$, so the congruence statement is $\triangle JKL \cong \triangle MNO$.
- 16) **Choice B is correct.** (M.8.23) Corresponding angles are congruent: $9t - 15 = 4t + 10 \Rightarrow 5t = 25 \Rightarrow t = 5$.
- 17) **Choice D is correct.** (M.8.3) Add exponents: $n^6 \cdot n^{-4} \cdot n^3 = n^{6-4+3} = n^5$.
- 18) **Choice D is correct.** (M.8.4) $s = \sqrt{200} = \sqrt{100 \times 2} = 10\sqrt{2} \approx 14.14$ meters.
- 19) **Choice D is correct.** (M.8.6) Divide coefficients: $1.8 \div 9 = 0.2 = 2 \times 10^{-1}$. Subtract exponents: $10^{-2-(-8)} = 10^6$. Combine: $2 \times 10^{-1} \times 10^6 = 2 \times 10^5$.
- 20) **Choice C is correct.** (M.8.7) Substitute $x = 7$ into $y = 2x$: $y = 2(7) = 14$. The cost is \$14.
- 21) **Choice A is correct.** (M.8.18) The y -intercept is where $x = 0$. The graph starts at the origin, so the y -intercept is $(0, 0)$.
- 22) **The correct answer is A,C.** (M.8.26) A is correct: MAD is the average absolute deviation from the mean. C is correct: it restates this in slightly different language. B is incorrect: MAD is not about range. D is incorrect: MAD is the mean, not median, of deviations. E is incorrect: MAD is symmetric around the mean regardless of median position.
- 23) **Choice A is correct.** (M.8.26) Distance $= \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10$ units.
- 24) **Choice D is correct.** (M.8.25) Rectangle $= 18 \times 6 = 108 \text{ cm}^2$. Triangle $= \frac{1}{2} \times 6 \times 8 = 24 \text{ cm}^2$. Total $= 108 + 24 = 132 \text{ cm}^2$.
- 25) **Choice A is correct.** (M.8.23) The sum of interior angles in a hexagon is 720° . The known angles add to $85 + 125 + 140 + 110 + 98 = 558^\circ$, so $x = 720 - 558 = 162^\circ$.
- 26) **Choice B is correct.** (M.8.26) The factorial symbol $!$ means multiply all whole numbers from that number down to 1. So $3! = 3 \times 2 \times 1 = 6$.
- 27) **Choice A is correct.** (M.8.2) Zero slope means $\Delta y = 0$, so the line is perfectly horizontal (no vertical change). A vertical line has undefined slope.



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A Note for a Careful Thinker

Hi, Careful Thinker!

◇ This high-stamina book gave you nine substantial Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. This book gave you room to practice the kind of thinking eighth graders need: modeling linear relationships, solving systems, connecting algebra and geometry, and interpreting data. ◇

★ **Remember this:** The goal was never just to finish pages. The goal was to become the kind of student who knows how to begin, how to adjust, and how to check. ★

Your Careful-Thinking Toolkit

- **Read Twice:** First for the story, second for the math.
- **Label Values:** Give each number a job.
- **Check Signs:** Negatives and inequalities deserve attention.
- **Use Evidence:** Let the work prove the answer.

Grade 8 test-day tip: On test day, underline the question before solving. It keeps your answer aimed at the right target.

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

Jay Daie

Your Math Practice Coach

CONFIDENCE TODAY, SUCCESS TOMORROW!

GRADE

8

Help your child excel in math with **9 full-length Grade 8 practice tests** designed to reflect real test formats and cover all key math standards.

With a wide variety of questions and real-world applications, this book builds the skills and confidence students need to achieve their best!



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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Testinar

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