

10

West Virginia

WVGSA

GRADE

8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

10

PRINTED TESTS



2

ONLINE TESTS



Build Confidence



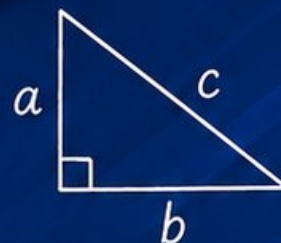
Master Key Math Skills



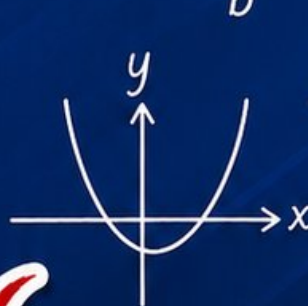
Answer Explanations for
Every Question



Test-Taking Strategies
That Work



$$y = mx + b$$



$$3x - 7 = 2(x + 5)$$
$$x = 17$$

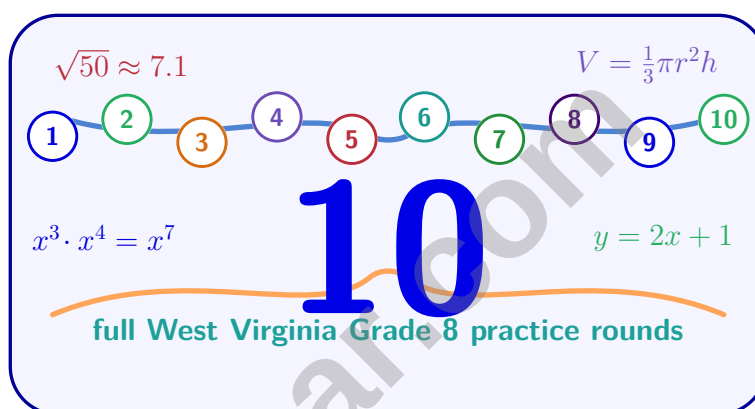


USE THESE TWO
**ADDITIONAL ONLINE
PRACTICE TESTS**

FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.

10 West Virginia WVGSA Grade 8 Math Practice Tests

West Virginia Grade 8 WVGSA Practice for ridge-line practice across real numbers, linear relationships, equations, geometry, and data



Ten complete 40-question Grade 8 WVGSA practice rounds with linear relationships, scientific notation, real numbers, equations, functions, 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!

Ten focused rounds for sharper West Virginia WVGSA math thinking

This book gives you ten full Grade 8 WVGSA math practice tests. Each round is built to help you notice structure, compare quantities, use linear reasoning, handle real numbers, and explain your thinking with care.

Grade 8 standards focus: This page supports **What Is a Function?** (M.8.14): Understand that a function is a rule that assigns to each input exactly one output. Another recurring target is **Multiplying Linear Expressions and Factoring** (M.8.9): Analyze and solve real-world and mathematical problems utilizing linear equations in one variable.

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 ten-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 a proportion, equation, diagram, number line, 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.

Grade 8 standards focus: Keep the routine connected to **Linear vs. Nonlinear Functions** (M.8.14): Interpret $y = mx + b$ as defining a linear function. Give examples of functions that are not linear. The same routine helps with **Composite Figures: Area and Perimeter** (M.8.25): Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

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?

Ten West Virginia WVGSA tests, 400 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Linear relationships, integer exponents, scientific notation, real-number reasoning, and careful reading.
Tests 4–6	Expressions, equations, inequalities, transformations, geometry, and multi-step problem solving.
Tests 7–9	Data analysis, probability, mixed review, stamina, and choosing efficient strategies.
Test 10	A final West Virginia round to show growth across the whole book.
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.

Grade 8 standards focus: Use these habits while practicing **Rotations, Reflections, and Translations** (M.8.19): Verify experimentally the properties of rotations, reflections, and translations. You will also meet **Rational and Irrational Numbers** (M.8.1): Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats....



Scan me!
For more practice
& answers

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- 1) To simplify $\frac{(w^4)^3}{w^6}$, which law should be applied first?
- ☐ A. Quotient rule ☐ C. Product rule
☐ B. Zero exponent rule ☐ D. Power of a power rule
- 2) A rectangular prism has dimensions $2\text{ m} \times 3\text{ m} \times 4\text{ m}$ with surface area 52 m^2 . If all dimensions are doubled to $4\text{ m} \times 6\text{ m} \times 8\text{ m}$, by what factor does the surface area increase?
- ☐ A. Multiplied by 2 ☐ C. Multiplied by 4
☐ B. Multiplied by 3 ☐ D. Multiplied by 8
- 3) 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 ($\approx 33.49\text{ cm}^3$) ☐ C. Both have equal volume
☐ B. Cylinder ($\approx 100.48\text{ cm}^3$) ☐ D. Cannot determine from given data
- 4) Compare the values: $\sqrt{36}$ and $\sqrt[3]{216}$. Which is larger?
- ☐ A. $\sqrt{36}$ is larger ☐ C. They are equal
☐ B. $\sqrt[3]{216}$ is larger ☐ D. Cannot be determined
- 5) What is the product $(3 \times 10^4) \times (2 \times 10^5)$ in scientific notation?
- ☐ A. 5×10^9 ☐ C. 6×10^{20}
☐ B. 6×10^{10} ☐ D. 6×10^9



- 6) A bakery produces 50 cookies per hour. After 4 hours, how many cookies have been produced?

- 7) Factor $x^2 + 5x - 36$.

☐ A. $(x + 9)(x - 4)$

☐ C. $(x + 12)(x - 3)$

☐ B. $(x - 9)(x + 4)$

☐ D. $(x + 6)(x - 6)$

- 8) To determine the solution region of an inequality, you can use a test point. Which is the most efficient test point to select?

☐ A. A point on the boundary line

☐ C. Any point with negative

☐ B. The origin $(0, 0)$, provided it is not
on the boundary

coordinates

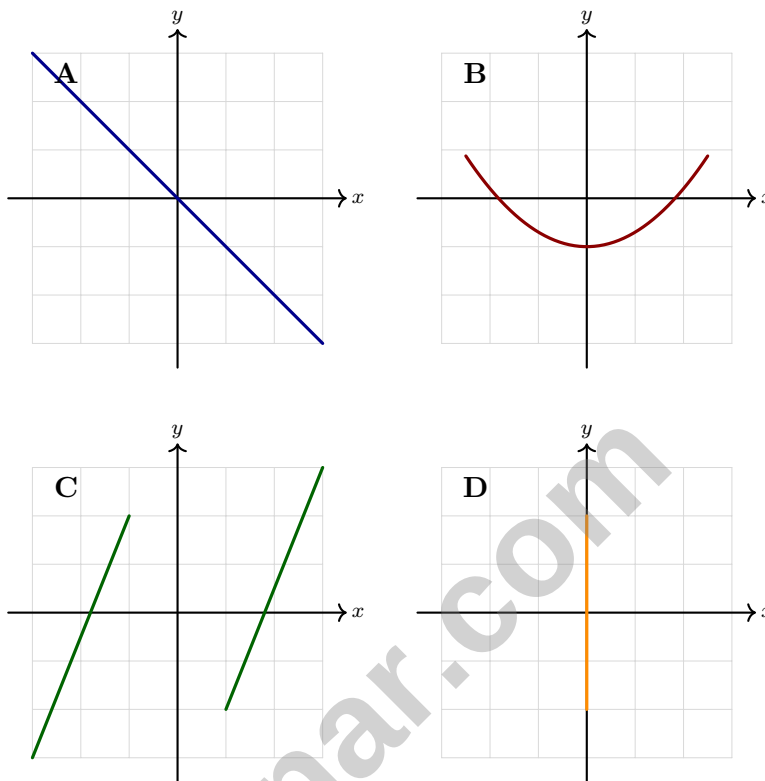
☐ D. A point in Quadrant III



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9) Which graph shows a single linear function?



☐ A. Graph A (diagonal line).

☐ B. Graph B (parabola).

☐ C. Graph C (two disconnected segments).

☐ D. Graph D (vertical line segment).

10) Interest earned: Account X: $I(m) = 0.8m$ (monthly interest in dollars). Account Y at month 0: \$0, month 12: \$10. Which earns more annually (12 months)?

☐ A. Account X

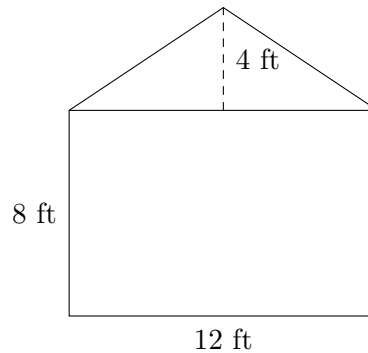
☐ B. Account Y

☐ C. Both earn equal

☐ D. Cannot be determined

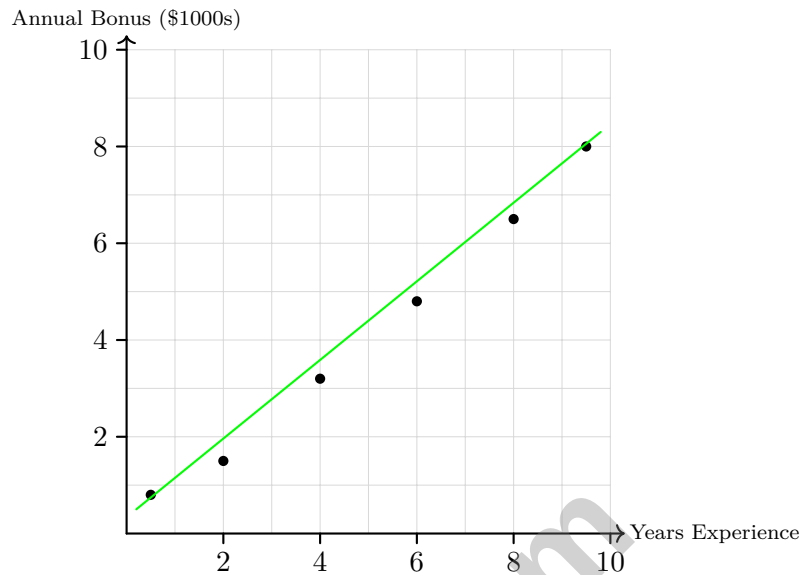


- 1) A composite figure consists of a rectangle with a triangular roof. The rectangle is 12 ft wide and 8 ft tall, and the triangle has the same base and a height of 4 ft. What is the area?



- ☐ A. 96 ft² ☐ C. 132 ft²
☐ B. 120 ft² ☐ D. 144 ft²
- 2) Two hikers start from the same point, walking in opposite directions. One walks at 4 mph, the other at 5 mph. After how many hours are they 27 miles apart?





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 segment has length 20 cm and is dilated by a scale factor of 0.4. What is the new length?

☐ A. 8 cm☐ C. 24 cm☐ B. 20 cm☐ D. 50 cm

5) A quadrilateral has three interior angles: 75° , 95° , and 110° . What is the measure of the fourth angle? Show your work.

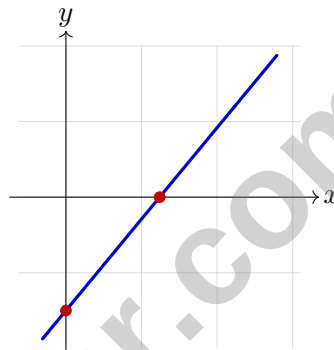


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1) If the MAD of a data set is 0, and you add a new value equal to the current mean, what happens to the MAD?

- ☐ A. MAD becomes positive ☐ D. Cannot determine without knowing the data
- ☐ B. MAD stays 0
- ☐ C. MAD doubles

2) A function has a y -intercept of -3 and an x -intercept of 2 . On the graph, these appear at which points?



- ☐ A. $(0, -3)$ and $(2, 0)$ ☐ C. $(0, 2)$ and $(-3, 0)$
- ☐ B. $(-3, 0)$ and $(0, 2)$ ☐ D. $(2, 0)$ and $(0, 0)$

3) Three points lie on the same line: $(1, 5)$, $(3, 9)$, and $(x, 13)$. What is the value of x ?

- ☐ A. 4 ☐ C. 6
- ☐ B. 7 ☐ D. 5

4) A slower cyclist riding 12 mph has a 9-mile head start. A faster cyclist riding 15 mph starts from the same point and rides in the same direction. How long will it take the faster cyclist to catch up?

- ☐ A. 2 hours ☐ C. 3 hours
- ☐ B. 2.5 hours ☐ D. 4 hours

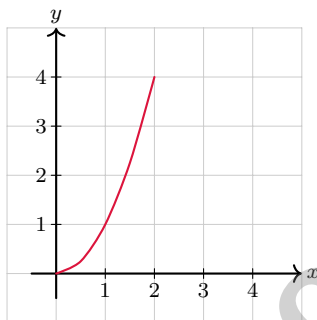


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5) A triangle is dilated by a scale factor of 4. Which statement is true?

- ☐ A. Each angle is multiplied by 4 ☐ D. The shape becomes a different type of polygon
☐ B. The angles remain the same
☐ C. Each angle is divided by 4

6) The graph below curves upward. Is it linear?



- ☐ A. Yes, because x and y are both positive ☐ C. Yes, the function is always increasing
☐ B. No, the curve is not a straight line ☐ D. No, only because it starts at the origin

7) Which table does NOT represent a linear function?

☐ A.

x	y
0	5
1	7
2	9

x	y
1	2
2	5
3	10

☐ C.

x	y
0	0
2	6
4	12

☐ D.

x	y
1	3
3	7
5	11



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.8.3) Simplify the numerator first: $(w^4)^3 = w^{12}$ (power of a power), then apply quotient rule.
- 2) **Choice C is correct.** (M.8.27) Original: $SA = 2(6 + 8 + 12) = 52 \text{ m}^2$. Scaled: $SA = 2(24 + 32 + 48) = 208 \text{ m}^2$. Ratio: $208/52 = 4$. When dimensions scale by $k = 2$, surface area scales by $k^2 = 4$.
- 3) **Choice B is correct.** (M.8.27) Sphere: $V = \frac{4}{3} \times 3.14 \times 8 = 33.49 \text{ cm}^3$. Cylinder: $V = 3.14 \times 4 \times 8 = 100.48 \text{ cm}^3$. Cylinder is larger.
- 4) **Choice C is correct.** (M.8.4) $\sqrt{36} = 6$ and $\sqrt[3]{216} = 6$, so they are equal.
- 5) **Choice D is correct.** (M.8.6) Multiply the coefficients and add the exponents: $(3 \times 2) \times 10^{4+5} = 6 \times 10^9$.
- 6) **The correct answer is 200.** (M.8.7) Compute $50 \times 4 = 200$.
- 7) **Choice A is correct.** (M.8.9) Find two numbers that multiply to -36 and add to 5 : 9 and -4 . Verify: $9 \cdot (-4) = -36$ and $9 - 4 = 5$.
- 8) **Choice B is correct.** (M.8.26) The origin is easy to test computationally and gives quick results. If the boundary line passes through $(0, 0)$, choose another convenient point like $(1, 0)$ or $(0, 1)$.
- 9) **Choice A is correct.** (M.8.14) Graph A is one nonvertical straight line, so it is a linear function. Graph B is a function but not linear. Graph C is made of two separate segments, not one single linear function. Graph D is a vertical line segment, so it is not a function.
- 10) **Choice B is correct.** (M.8.2) $I_X(12) = 0.8(12) = 9.60$ dollars. Slope of Y: $(10 - 0)/12 \approx 0.833$ per month, so $I_Y(12) = 10$ dollars. Since $10 > 9.60$, Account Y earns more.
- 11) **Choice A is correct.** (M.8.14) Slope = $\frac{11-5}{4-2} = \frac{6}{2} = 3$.
- 12) **Choice C is correct.** (M.8.17) Proportional functions have form $y = mx$ (intercept = 0). Option C has intercept 1, so it is not proportional.
- 13) **The correct answer is $(3, \frac{5}{2})$.** (M.8.10) Add the equations to eliminate y : $(3x - 2y) + (x + 2y) = 4 + 8$, so $4x = 12$, giving $x = 3$. Substitute: $3 + 2y = 8$, so $2y = 5$ and $y = \frac{5}{2}$.
- 14) **Choice B is correct.** (M.8.20) Both reflection and translation are rigid motions that preserve area. The final shape is congruent to the original, so it has the same area: 24 square units.
- 15) **The correct answer is 5.** (M.8.12) Solve $45 + 5q \geq 70$, giving $q \geq 5$. The minimum whole number is 5.
- 16) **Choice B is correct.** (M.8.21) The translation vector is $(4, 5) - (1, 2) = (3, 3)$. So $Q' = Q + (3, 3) = (4, 2) + (3, 3) = (7, 5)$.
- 17) **Choice B is correct.** (M.8.24, M.8.25) From $(\sqrt{32})^2 + (\sqrt{4})^2 = c^2$, we get $32 + 4 = 36$, so $c = \sqrt{36} = 6$.
- 18) **Choice A is correct.** (M.8.26) Check: $3^2 + 4^2 = 9 + 16 = 25 = 5^2$. This is a Pythagorean triple.
- 19) **The correct answer is A,B.** (M.8.30) A is correct: the slope 1.2 is the rate of change; y increases 1.2 units per 1-unit increase in x . B is correct: the y -intercept 8 is the predicted y -value at $x = 0$. C is wrong: positive slope means y increases, not decreases. D is wrong: 8 is the intercept, not the slope. E is wrong: the sign of the intercept does not determine the slope's sign.
- 20) **Choice D is correct.** (M.8.25) If the angles are $4k$ and $11k$, then $4k + 11k = 180$, so $15k = 180$ and $k = 12$. The smaller angle is $4k = 48^\circ$.
- 21) **Choice C is correct.** (M.8.27) $V = \frac{1}{3} \times B \times h \Rightarrow 245 = \frac{1}{3} \times 49 \times h \Rightarrow h = \frac{245 \times 3}{49} = \frac{735}{49} = 15 \text{ cm}$.
- 22) **Choice D is correct.** (M.8.28) Tight clustering around an upward trend indicates strong positive correlation. Points that are far from an imaginary line show weak correlation.
- 23) **Choice C is correct.** (M.8.31) Column-conditional frequency among online purchases: $\frac{57}{193} \approx 0.30 \approx 30\%$.
- 24) **Choice B is correct.** (M.8.18) From $x = -1$ to $x = 2$, the graph moves downward from 2 to -1 . The other listed intervals are flat or increasing.
- 25) **Choice B is correct.** (M.8.25) Rectangle = $8 \times 5 = 40 \text{ cm}^2$. Triangle = $\frac{1}{2} \times 8 \times 3 = 12 \text{ cm}^2$. Total = $40 + 12 = 52 \text{ cm}^2$.
- 26) **Choice C is correct.** (M.8.23) Each interior angle of a regular octagon: $\frac{(8-2) \times 180}{8} = \frac{1080}{8} = 135^\circ$.



Hi, Brave Learner!

◇ No one gets stronger by only doing easy problems. The questions that slowed you down were part of the training. This full-length book gave you ten complete Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

★ **Remember this:** Mistakes are not proof that you cannot do math. They are directions. They show what to review, what to ask about, and what to practice next. ★

How to Use Mistakes

- **Name It:** Was it reading, setup, arithmetic, or checking?
- **Fix It:** Correct the work while the question is fresh.
- **Repeat It:** Try one similar problem soon.
- **Remember It:** Write the lesson in your own words.

Grade 8 test-day tip: Treat every corrected error as a point you are preparing to earn next time.

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

Jay Daie

Your Brave-Learning Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **10** full-length Math practice tests and **2** online tests to help Grade 8 students build confidence, strengthen skills, and excel on standardized assessments.

Each practice test is carefully crafted to reflect the latest standards and includes a variety of question types, realistic test conditions, and detailed answer explanations.

Perfect for classroom use, homework, test preparation, and extra practice at home.



THIS BOOK INCLUDES:

10 Full-Length Printed Tests

2 Online Practice Tests

 Detailed Answers & Explanations



MORE PRACTICE. GREATER RESULTS.

Give your child the tools to build strong math skills, confidence, and a positive attitude toward learning.

WHAT YOU'LL GAIN



Build Confidence

Practice regularly to feel prepared and test-ready.



Master Key Skills

Develop strong math skills and problem solving abilities.



Improve Understanding

Learn with clear explanations and step-by-step solutions.



Test Strategies

Learn proven strategies to approach every question with confidence.



Boost Performance

Apply your knowledge and achieve your best score!

TOPICS COVERED

- | | |
|---------------------------|----------------------------|
| ✓ The Number System | ✓ Statistics & Probability |
| ✓ Expressions & Equations | ✓ Data Analysis |
| ✓ Inequalities | ✓ Measurement |
| ✓ Functions | ✓ Pythagorean Theorem |
| ✓ Geometry | ✓ Surface Area & Volume |
| ✓ Ratios & Proportions | ✓ And More! |



2 ONLINE TESTS

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



2 EXTRA ONLINE TEST ACCESS CODE IS INSIDE THE BOOK!

Don't lose it—your extra practice and success start here!



PRACTICE
REGULARLY



STAY
FOCUSED



SOLVE
CONFIDENTLY



SUCCEED
BRIGHTLY