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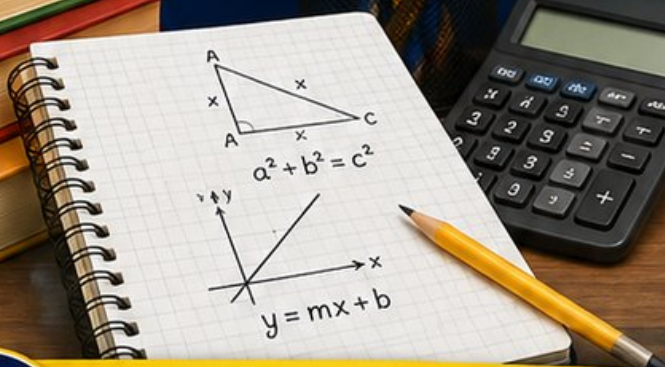
West Virginia

WVGSA

GRADE 8 MATH

PRACTICE TESTS

Standards Aligned Problem Solving For
Comprehensive Assessment Programs



6 PRINTED
TESTS

+



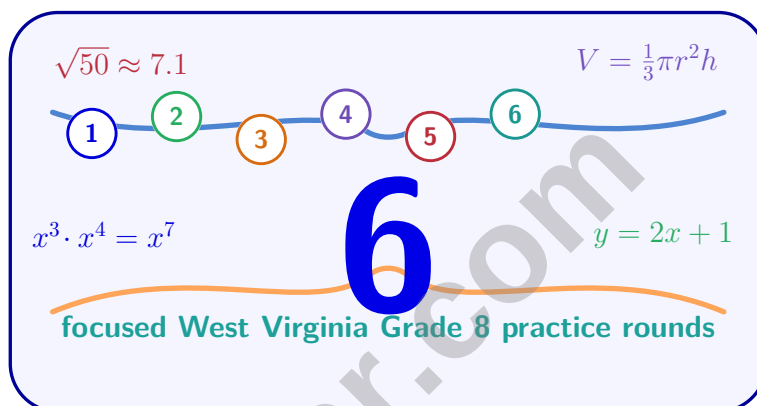
2 ONLINE
TESTS



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

6 West Virginia WVGSA Grade 8 Math Practice Tests

Grade 8 Math Prep for Careful Reasoning, Accuracy, and Test Readiness



Six 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!

Six focused rounds for sharper WVGSA math thinking

This book gives you six 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 six-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?

Six WVGSA tests, 240 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 4–6	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

Table of Contents

★ Practice Test 1	_____	14
★ Practice Test 2	_____	30
★ Practice Test 3	_____	44
★ Practice Test 4	_____	59
★ Practice Test 5	_____	77
★ Practice Test 6	_____	93
Practice Test Answer Keys	_____	108
Practice Test Answers and Explanations	_____	112

1) Juan borrows \$1,200 at 8% simple interest. If he repays the loan in 2 years, what is the total amount he owes?

☐ A. \$1,200

☐ B. \$1,292

☐ C. \$1,392

☐ D. \$1,512

2) The number $\sqrt[3]{8}$ (cube root of 8) is:

☐ A. Irrational

☐ B. Between 8 and 16

☐ C. 2.67

☐ D. 2, which is rational

n	4	9	16	25
$\sqrt{n}$	2	3	4	5

3)

Using the table, between which integers does $\sqrt{11}$ lie?

☐ A. 2 and 3

☐ B. 5 and 6

☐ C. 4 and 5

☐ D. 3 and 4

4) Simplify and estimate $\sqrt{2} \times \sqrt{8}$.

☐ A. Approximately 4.5

☐ B. Exactly 8

☐ C. Approximately 3.4

☐ D. Exactly 4

5) Calculate the Mean Absolute Deviation for the data set $\{5, 10, 15, 20\}$.



6) Simplify $\frac{a^4b^3}{a^2b}$.

☐ A. a^2b^{-2}

☐ B. a^2b^3

☐ C. a^6b^4

☐ D. $\frac{a^2b^2}{1}$ or a^2b^2

7) Which number is closest to $\sqrt{30}$?

☐ A. 5.4

☐ B. 5.7

☐ C. 5.6

☐ D. 5.5

8) Convert 950 to scientific notation.

☐ A. 9.5×10^1

☐ B. 95×10^1

☐ C. 9.5×10^3

☐ D. 9.5×10^2

9) A student reads 25 pages of a book per day. How many days to read 200 pages? (Proportional relationship.)

☐ A. 5 days

☐ B. 6 days

☐ C. 7 days

☐ D. 8 days

10) The table below shows a relation. Is it a function?

x	y
1	3
2	6
3	9
4	12

☐ A. No, because the outputs are larger than inputs.

☐ B. Yes, each input has exactly one output.

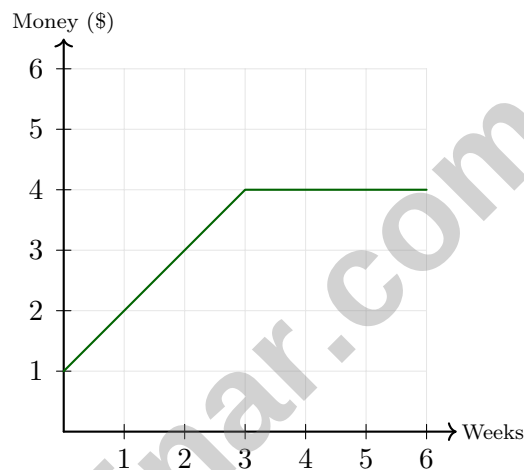
☐ C. No, because y values increase by 3.

☐ D. Yes, because all values are positive.



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- 11) A bag contains 5 red marbles, 3 blue marbles, and 2 yellow marbles. If one marble is drawn without looking, what is the probability of drawing a marble that is NOT blue? Express your answer as a decimal.



12)

A student saves money over time. The graph shows: increases for 3 weeks, then constant for 3 weeks. The y -intercept is 1. Which is true?

- | | |
|--|---|
| ☐ A. The student had \$0 at the start | ☐ C. The student spends money after week 3 |
| ☐ B. The student had \$1 initially and saves \$1 per week, then stops | ☐ D. The function is linear over all 6 weeks |



1) A student earns \$15 per hour. Which table represents this relationship?

Hours	1	2	3
Earnings (\$)	15	30	45

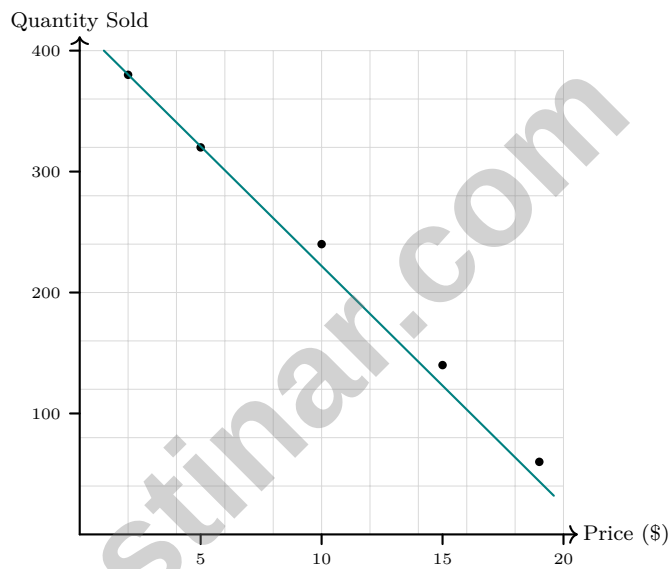
What is the slope?

☐ A. 15

☐ C. 30

☐ B. $\frac{1}{15}$

☐ D. $\frac{15}{30}$



2)

A store analyzes the relationship between item price and quantity sold. Which interpretation is correct?

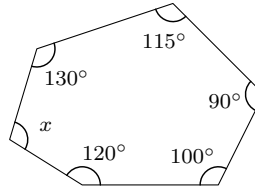
☐ A. As price increases, quantity sold tends to decrease

☐ C. Price is not related to quantity sold

☐ B. Higher prices cause fewer items to sell

☐ D. Quantity sold determines the price





3)

A hexagon has five known interior angles: 120° , 100° , 90° , 115° , 130° . What is the sixth angle?

☐ A. 145° ☐ C. 165° ☐ B. 155° ☐ D. 175°

4) Two scatter plots show the same relationship. In Plot A, the points cluster tightly around an imaginary line with very little scatter. In Plot B, the points are spread far from any line. Which statement is true?

☐ A. Plot A has weaker correlation☐ D. Strength of correlation cannot be☐ B. Plot A has stronger correlation compared visually☐ C. Both plots show equally strong correlation

5) A two-way table categorizes 150 households by income level and internet access:

	Has Internet	No Internet	Total
Low Income	40	50	90
High Income	55	5	60
Total	95	55	150

Among high-income households, what is the relative frequency of those without internet, as a decimal?

☐ A. 0.033☐ C. 0.367☐ B. 0.083☐ D. 0.917

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1) Which pair of numbers are both irrational?

- ☐ A. $\sqrt{121}$ and π ☐ C. $-\frac{3}{7}$ and $\sqrt{15}$
☐ B. $0.505005\dots$ (non-repeating) and $\sqrt{16}$ ☐ D. $\sqrt{15}$ and $\sqrt{24}$

2) Calculate $(8.5 \times 10^4) - (3.7 \times 10^4)$ in scientific notation.

3) Runner P : $d(t) = 8t$ mph. Runner Q at $t = 0$: 2 mi, $t = 3$: 27 mi. Faster?

- ☐ A. Runner P ☐ C. Both same.
☐ B. Runner Q ☐ D. Cannot be determined.

4) Two parallel lines cut by a transversal. If one angle formed is 78° , how many angles of 102° are formed?

- ☐ A. 1 ☐ C. 3
☐ B. 2 ☐ D. 4



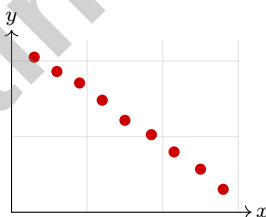
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& answers

- 5) A rectangular path (outer dimensions 20 m by 10 m, inner rectangle 16 m by 6 m) forms a frame. What is the area of the path only?



- ☐ A. 56 m² ☐ C. 96 m²
☐ B. 76 m² ☐ D. 104 m²
- 6) A trend line has equation $y = 2.5x - 5$. What would be the predicted value of y when $x = 10$?

- ☐ A. 30 ☐ C. 20
☐ B. 25 ☐ D. 15



7)

A scatter plot displays the number of hours spent watching television versus hours spent exercising per week for 25 teenagers. The points show a downward trend: as TV hours increase, exercise hours decrease. What type of correlation is shown?

- ☐ A. Positive correlation ☐ C. No correlation
☐ B. Negative correlation ☐ D. Equal correlation on both sides



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 C is correct.** (M.8.25) Interest: $I = 1200 \times 0.08 \times 2 = \192 . Total: $A = 1200 + 192 = \$1,392$.
- 2) **Choice D is correct.** (M.8.1) $\sqrt[3]{8} = 2$ because $2 \times 2 \times 2 = 8$. Since 2 is an integer, it is rational.
- 3) **Choice D is correct.** (M.8.2) From the table, $3^2 = 9$ and $4^2 = 16$. Since $9 < 11 < 16$, we have $3 < \sqrt{11} < 4$.
- 4) **Choice D is correct.** (M.8.2) $\sqrt{2} \times \sqrt{8} = \sqrt{16} = 4$ exactly. Perfect pair product.
- 5) **The correct answer is 5.** (M.8.26) Mean = 12.5. Deviations: $|5 - 12.5| = 7.5$, $|10 - 12.5| = 2.5$, $|15 - 12.5| = 2.5$, $|20 - 12.5| = 7.5$. Sum = 20. MAD = $20/4 = 5$.
- 6) **Choice D is correct.** (M.8.3) Quotient rule for each variable: $\frac{a^4}{a^2} = a^2$ and $\frac{b^3}{b} = b^2$. Result: a^2b^2 .
- 7) **Choice D is correct.** (M.8.4) $5.5^2 = 30.25$ and $5.4^2 = 29.16$. Since 30 is between these, $\sqrt{30} \approx 5.48$, closest to 5.5.
- 8) **Choice D is correct.** (M.8.5) Move the decimal 2 places left to get 9.5; the exponent is 2.
- 9) **Choice D is correct.** (M.8.7) $y = 25x$. Solve $200 = 25x$: $x = 200/25 = 8$ days.
- 10) **Choice B is correct.** (M.8.14) Each input value (1, 2, 3, 4) corresponds to exactly one output value (3, 6, 9, 12). The relationship is $y = 3x$, making it a function.
- 11) **The correct answer is 0.7.** (M.8.25) Total: 10 marbles. Not blue: $5 + 2 = 7$. $P(\text{not blue}) = \frac{7}{10} = 0.7$.
- 12) **Choice B is correct.** (M.8.18) The y -intercept (at $x = 0$) is 1, so the student has \$1 initially. From 0 to 3 weeks, the graph rises linearly from 1 to 4, a gain of \$1 per week. From week 3 to 6, the graph is flat at 4, so no additional savings.
- 13) **The correct answer is 24.** (M.8.26) Calculate the factorial: $4! = 4 \times 3 \times 2 \times 1 = 24$ different arrangements.
- 14) **Choice D is correct.** (M.8.2) Slope (speed) = $\frac{120 \text{ miles}}{3 \text{ hours}} = 40$ miles per hour.
- 15) **Choice C is correct.** (M.8.9) Let $n =$ cups sold. Cost is $400 + 2n$ and revenue is $5n$. Break-even occurs when $5n = 400 + 2n$, so $3n = 400$ and $n = 133\frac{1}{3}$. The shop must sell about 134 cups to cover the cost.
- 16) **Choice B is correct.** (M.8.22) Scale factor is $\frac{3}{6} = \frac{1}{2}$ (or $\frac{4}{8} = \frac{1}{2}$). This is a reduction.
- 17) **The correct answer is $\frac{2}{9}$.** (M.8.19) Set $x = 0.2$, so $10x = 2.2$. Subtracting: $10x - x = 2$, giving $9x = 2$ and $x = \frac{2}{9}$.
- 18) **Choice C is correct.** (M.8.19) The pattern shows the function increases by 3 for each unit increase in x (or by 6 for each 2-unit increase). So $m(4) = 11 + 6 = 17$.
- 19) **The correct answer is B,D.** (M.8.29) For a good fit, residuals should be small and clustered around zero. Residuals measure vertical distance from the data points to the line. Large residuals indicate a weaker fit, not a strong one.
- 20) **Choice D is correct.** (M.8.27) $SA = 6(6)^2 = 6(36) = 216 \text{ cm}^2$.
- 21) **Choice A is correct.** (M.8.19) Step 1: Rotate 90° CCW: $(x, y) \rightarrow (-y, x)$. Step 2: Translate 3 units right (add 3 to x -coordinate): $(-y, x) \rightarrow (-y + 3, x)$.
- 22) **Choice D is correct.** (M.8.8) A line through the origin has y -intercept 0. With slope 3, the equation is $y = 3x + 0$ or $y = 3x$.
- 23) **Choice A is correct.** (M.8.9) Distribute: $6x + 12 = 30$. Subtract 12: $6x = 18$. Divide by 6: $x = 3$.
- 24) **Choice C is correct.** (M.8.12) Distribute: $-2x - 6 > 8$. Add 6: $-2x > 14$. Divide by -2 (FLIP): $x < -7$.
- 25) **Choice D is correct.** (M.8.26) SOLID line (includes boundary) and shading BELOW the line indicates $y \leq 2x$.
- 26) **Choice C is correct.** (M.8.20) A 90-degree counterclockwise rotation is a rigid motion that preserves all distances and angles. When triangle XYZ is rotated about the origin, each vertex moves but distances between vertices remain the same. Therefore, all corresponding sides and angles are equal: $XZ = X'Z'$, $XY = X'Y'$, $YZ = Y'Z'$, and all angles match.
- 27) **Choice C is correct.** (M.8.27) Radius $r = 8$ mm. $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 512 = 2143.57 \text{ mm}^3$.
- 28) **Choice D is correct.** (M.8.30) From 10°C to 15°C (an increase of 5°), chirps go from about 8 to 11 hundreds, an increase of about 3 hundreds.
- 29) **Choice B is correct.** (M.8.6) Scientific notation requires the coefficient to be in the range $[1, 10)$. In choice B, $10.2 \geq 10$, so it is not in standard form. It should be 1.02×10^5 .



A Note for a Careful Thinker

Hi, Careful Thinker!

◇ This deep and steady book gave you six full 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

PRACTICE TODAY. ACHIEVE TOMORROW.

6

Give your child the confidence and skills they need with **6 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!

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 | ✓ Statistics & Probability |
| ✓ Expressions & Equations | ✓ Pythagorean Theorem |
| ✓ Ratios & Proportional Relationships | ✓ Volume & Surface Area |
| ✓ Linear Equations | ✓ Transformations |
| ✓ Functions | ✓ Inequalities |
| ✓ Geometry | ✓ Data Analysis & Graphing |
| | ✓ And More! |



6 PRINTED TESTS



2 ONLINE TESTS



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