

West Virginia

WVGSA

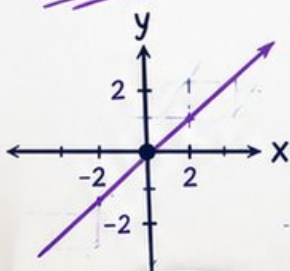
GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

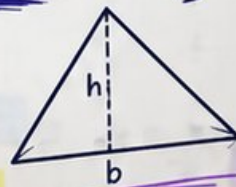
$$y = mx + b$$



**BUILD
CONFIDENCE.
SHARPEN SKILLS.
ACE YOUR
EXAM!**

Practice
Today
Succeed
Tomorrow!

$$A = \frac{1}{2}bh$$



7 PRINTED
TESTS



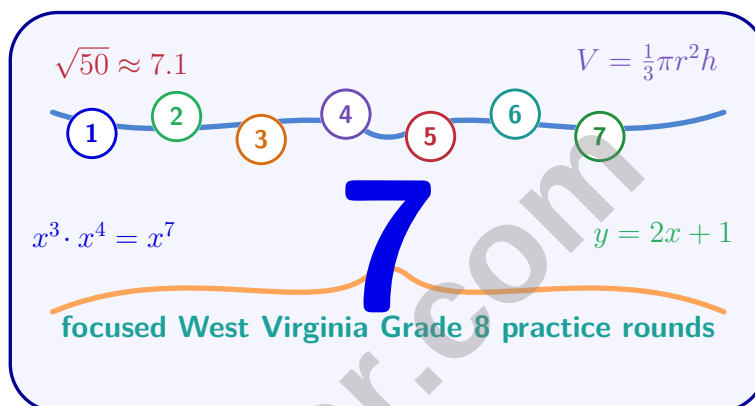
2 ONLINE
TESTS



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

7 West Virginia WVGSA Grade 8 Math Practice Tests

Seven WVGSA Rounds for Accurate Solving and Stronger Math Habits



Seven 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!

Seven focused rounds for sharper WVGSA math thinking

This book gives you seven 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 seven-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?

Seven WVGSA tests, 280 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.
Test 7	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

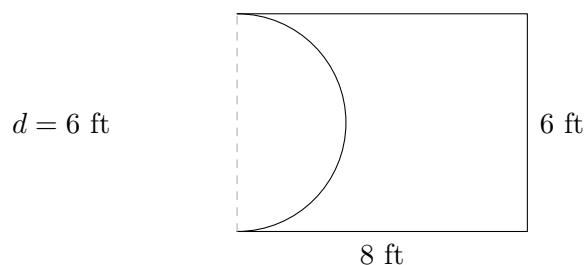
★ Practice Test 1	_____	13
★ Practice Test 2	_____	29
★ Practice Test 3	_____	43
★ Practice Test 4	_____	57
★ Practice Test 5	_____	75
★ Practice Test 6	_____	93
★ Practice Test 7	_____	110
Practice Test Answer Keys	_____	124
Practice Test Answers and Explanations	_____	129

- 1) A student expands $(x + 2)(x + 3)$ and writes $x^2 + 5x + 6$. Is this correct?
- ☐ A. Yes, it is correct. ☐ C. No; the middle term is wrong.
☐ B. No; the constant term is wrong. ☐ D. No; all terms are wrong.
- 2) 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.
- 3) Solve by elimination:
$$\begin{cases} 2x + 5y = 19 \\ 2x + y = 7 \end{cases}$$
- ☐ A. (1, 5) ☐ C. (3, 1)
☐ B. (2, 3) ☐ D. (4, -1)
- 4) $S_1(w) = 20w$ and S_2 at (0, 50), (1, 56). After 4 weeks, which has more?
- ☐ A. S_1 ☐ C. Both same.
☐ B. S_2 ☐ D. Cannot be determined.
- 5) In triangle ABC , the angle at A is twice the angle at B . The angle at C is 20° greater than the angle at B . Find angle A .
- ☐ A. 60° ☐ C. 100°
☐ B. 80° ☐ D. 120°



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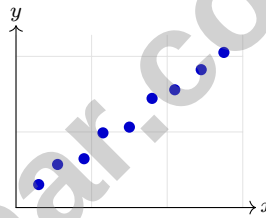
- 6) A student calculated the perimeter of a composite figure (semicircle on a rectangle) by adding dimensions: $8 + 6 + 8 + 6 + \pi \times 4 = 28 + 4\pi \approx 40.56$ ft. Which error did they make?



- ☐ A. Forgot to use the diameter, not radius.
 ☐ C. Used perimeter formula instead of area.
- ☐ B. Double-counted the top of the rectangle where the semicircle attaches.
 ☐ D. Calculated the radius as diameter.
- 7) A residual plot shows the residuals for a trend line fit to a data set. What would a residual plot with no clear pattern indicate?
- ☐ A. There are no residuals
 ☐ C. The data is nonlinear
- ☐ B. The trend line is a good fit
 ☐ D. The trend line is a poor fit
- 8) A student graphs $y < x + 2$ and shades ABOVE the line. What error did they make?
- ☐ A. The line should be solid, not dashed
 ☐ C. The y -intercept should be -2
- ☐ B. The shading should be BELOW, not above
 ☐ D. The slope should be positive



- 9) Pentagon JKLMN is congruent to pentagon PQRST. In pentagon JKLMN, all sides have equal length and each interior angle measures 108° . What can you conclude about pentagon PQRST?
- ☐ A. It is a regular pentagon
- ☐ B. Its sides have different lengths
- ☐ C. Its interior angles are not 108°
- ☐ D. It is smaller than JKLMN
- 10) A ladder leaning against a wall forms a right triangle. The ladder is 13 feet long (hypotenuse), and the base is 5 feet from the wall. How high up the wall does it reach?
- ☐ A. 8 feet
- ☐ B. 12 feet
- ☐ C. 18 feet
- ☐ D. 65 feet



- 11) Consider a scatter plot of students' math test scores versus their previous quiz scores. Most points lie close to an imaginary diagonal line, with only a few outliers. Which statement best describes the strength of correlation?
- ☐ A. Very weak correlation
- ☐ B. No correlation between the variables
- ☐ C. Strong positive correlation
- ☐ D. Weak negative correlation



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1) Which scenario can be modeled by a function?

- ☐ A. A student and all books they checked out this year.
- ☐ B. A positive number and its two square roots.
- ☐ C. Time of day and the temperature outside.
- ☐ D. A person and their email address (one person may have multiple emails).

2) Which equation has a negative slope?

- ☐ A. $y = 5x + 2$
- ☐ B. $y = -3x + 8$
- ☐ C. $y = \frac{1}{4}x - 1$
- ☐ D. $y = x + 6$

3) Solve for x : $4x + 9 = 4x + 2$

- ☐ A. $x = 7$
- ☐ B. $x = -7$
- ☐ C. Infinitely many solutions
- ☐ D. No solution

4) Divide: $\frac{8 \times 10^8}{2 \times 10^3}$

- ☐ A. 10×10^5
- ☐ B. 6×10^5
- ☐ C. 4×10^{11}
- ☐ D. 4×10^5

5) Solve: $\begin{cases} x + 2y = 10 \\ 3x - 2y = 2 \end{cases}$

- ☐ A. $(1, \frac{9}{2})$
- ☐ B. $(2, 4)$
- ☐ C. $(3, \frac{7}{2})$
- ☐ D. $(4, 3)$

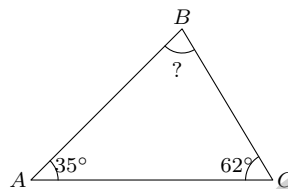


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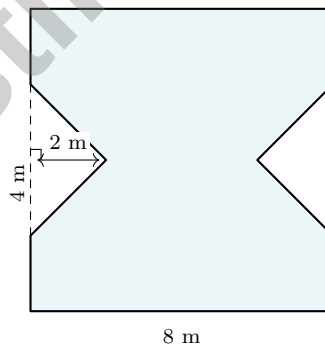
- 6) Function $p(x) = \frac{3}{2}x - 4$ and the table for function q : $(0, 2)$, $(2, 5)$, $(4, 8)$. Which has a steeper slope?

x	0	2	4
$q(x)$	2	5	8

- ☐ A. $p(x)$
☐ C. Both have equal slopes.
- ☐ B. $q(x)$
☐ D. Cannot be determined.
- 7) In triangle ABC , angle A measures 35° and angle C measures 62° . What is angle B ?



- ☐ A. 73°
☐ C. 93°
- ☐ B. 83°
☐ D. 103°
- 8) A composite figure has a square (8 m by 8 m) with two opposite triangular notches cut out (each 4 m base, 2 m height). What is the remaining area?



- ☐ A. 56 m^2
☐ C. 64 m^2
- ☐ B. 60 m^2
☐ D. 72 m^2



1) Video streaming Plan A: \$2.99 base, \$0.50 per movie. Plan B through (0, 1) and (10, 6) on a cost-movie plane. Which plan costs more at 20 movies?

- ☐ A. Plan A ☐ C. Both equal
☐ B. Plan B ☐ D. Cannot be determined

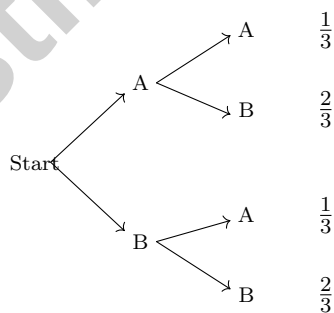
2) A license plate has 2 letters followed by 3 digits. Letters can be any of A through Z, and digits can be 0 through 9. How many possible license plates are there?

- ☐ A. $26^2 \times 10^3 = 676,000$ ☐ C. $26 \times 10 = 260$
☐ B. $26 + 26 + 10 + 10 + 10 = 82$ ☐ D. $(26 + 10)^5 = 60,466,176$

3) A student calculates the MAD and gets a negative value. What error did the student make?

- ☐ A. Divided by the wrong number ☐ C. Used the median instead of the mean
☐ B. Forgot to use absolute values in deviations ☐ D. Calculated range instead of MAD

Explain: Why is a negative MAD impossible?



4)

The tree diagram shows outcomes for spinning a spinner twice. Outcome A has probability $\frac{1}{3}$, and outcome B has probability $\frac{2}{3}$ on each spin. What is the probability of getting A then B?

- ☐ A. $\frac{2}{9}$ ☐ C. $\frac{4}{9}$
☐ B. $\frac{1}{3}$ ☐ D. $\frac{3}{9}$



5) Which of the following is rational?

☐ A. $\sqrt{2}$

☐ B. $\pi + 1$

☐ C. $\sqrt{\pi}$

☐ D. $\sqrt{64}$

6) Convert $0.\overline{72}$ to a fraction in simplest form.

☐ A. $\frac{8}{100}$

☐ B. $\frac{72}{100}$

☐ C. $\frac{72}{90}$

☐ D. $\frac{72}{99} = \frac{8}{11}$

7) Which statement is FALSE?

☐ A. $\pi \approx 3.14$

☐ B. $\sqrt{2} \approx 1.4$

☐ C. $\sqrt{50} \approx 5.0$

☐ D. $\sqrt{15} \approx 3.9$

8) Two cities are located at $(1, 3)$ and $(7, 11)$ on a map. If each unit represents 2 miles, what is the distance between the cities in miles?

9) Which loan has the lowest total repayment cost for \$3,000 principal?

☐ A. 6% for 2 years

☐ B. 5% for 3 years

☐ C. 4% for 4 years

☐ D. 3% for 5 years

10) What is the slope of the line $y = -2x + 5$?

☐ A. -2

☐ B. 2

☐ C. $-\frac{1}{2}$

☐ D. 5



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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 A is correct.** (M.8.9) FOIL: $(x+2)(x+3) = x^2 + 3x + 2x + 6 = x^2 + 5x + 6$. The student correctly applied FOIL.
- 2) **Choice C is correct.** (M.8.6) $3.5 \times 2 = 7$ 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.
- 3) **Choice C is correct.** (M.8.10) Subtract the second from the first: $(2x+5y) - (2x+y) = 19-7$, so $4y = 12$, giving $y = 3$. Substitute: $2x+1 = 7$, so $x = 3$. Solution: $(3, 3)$.
- 4) **Choice A is correct.** (M.8.2) $S_1(4) = 80$. S_2 slope: $(56-50)/1 = 6$, so $S_2(4) = 50+6(4) = 74$. Since $80 > 74$, S_1 has more.
- 5) **Choice B is correct.** (M.8.23) Let $B = x$. Then $A = 2x$ and $C = x+20$. The angles sum to 180° : $2x+x+(x+20) = 180$, so $4x = 160$ and $x = 40$. Therefore $A = 2x = 80^\circ$.
- 6) **Choice B is correct.** (M.8.25) For a semicircle on top of a rectangle, the top edge of the rectangle is NOT part of the perimeter outline; it's replaced by the semicircular arc. The student added both, overcounting.
- 7) **Choice B is correct.** (M.8.29) A residual plot with no clear pattern means residuals are scattered randomly and close to zero. This indicates the linear model explains the data well and assumptions are met.
- 8) **Choice B is correct.** (M.8.26) For $y < x+2$, the y values are LESS than the line, so shade BELOW. The dashed line is correct for the strict inequality $<$.
- 9) **Choice A is correct.** (M.8.20) Since the pentagons are congruent, pentagon PQIRST has the same properties as JKLMN: all sides are equal and all interior angles measure 108° . This makes it a regular pentagon.
- 10) **Choice B is correct.** (M.8.24, M.8.25) The 5-12-13 triple applies: $5^2 + h^2 = 13^2$ gives $25 + h^2 = 169$, so $h = 12$ feet.
- 11) **Choice C is correct.** (M.8.28) When most points cluster tightly around an imaginary upward line with few outliers far from it, the correlation is strong. Wide scatter indicates weak correlation.
- 12) **Choice C is correct.** (M.8.30) Set $y = 0$: $0 = -0.5x + 5 \Rightarrow 0.5x = 5 \Rightarrow x = 10$.
- 13) **Choice B is correct.** (M.8.31) Column-conditional frequency among action viewers (156 total): $\frac{72}{156} \approx 0.46$.
- 14) **Choice C is correct.** (M.8.14) $y = \frac{1}{2}x$ is in the form $y = mx + b$ with $m = \frac{1}{2}$ and $b = 0$. The others are incorrectly classified.
- 15) **The correct answer is $m = 25$.** (M.8.9) Add 2 to both sides: $\frac{m}{5} = 5$. Multiply both sides by 5: $m = 25$. Verify: $\frac{25}{5} - 2 = 5 - 2 = 3 \checkmark$.
- 16) **The correct answer is -4 .** (M.8.12) Solving gives $x \geq -4$, so the boundary value is -4 .
- 17) **Choice A is correct.** (M.8.17) For $x = 0$, $y = -5$. For $x = 2$, $y = 1$. For $x = 5$, $y = 10$. The sum is $-5 + 1 + 10 = 6$.
- 18) **The correct answer is B,E.** (M.8.8) The equation has slope $-\frac{2}{3}$ and y -intercept 5, so B and E are correct. The point $(5, 0)$ is not on the line because $-\frac{2}{3}(5) + 5 = \frac{5}{3}$, not 0. A perpendicular line would have slope $\frac{3}{2}$, not $-\frac{3}{2}$.
- 19) **Choice B is correct.** (M.8.21) Translation right 4, down 2: $(x, y) \rightarrow (x+4, y-2)$. So $M(5, 1) \rightarrow M'(9, -1)$.
- 20) **Choice A is correct.** (M.8.26) By the Pythagorean Theorem, $c^2 = 6^2 + 8^2 = 36 + 64 = 100$. Taking the square root: $c = \sqrt{100} = 10$.
- 21) **Choice C is correct.** (M.8.25) Adjacent angles on a straight line are supplementary, so they sum to 180° . Thus $x = 180 - 65 = 115^\circ$.
- 22) **Choice B is correct.** (M.8.27) $V_A = \frac{1}{3} \times 25 \times 6 = 50 \text{ cm}^3$. $V_B = \frac{1}{3} \times 25 \times 12 = 100 \text{ cm}^3$. Difference: $100 - 50 = 50 \text{ cm}^3$.
- 23) **Choice B is correct.** (M.8.23) Using $\frac{(n-2) \times 180}{n} = 162$: $(n-2) \times 180 = 162n \Rightarrow 180n - 360 = 162n \Rightarrow 18n = 360 \Rightarrow n = 20$.
- 24) **Choice B is correct.** (M.8.26) Absolute deviations: $|20-27.5| = 7.5$, $|25-27.5| = 2.5$, $|30-27.5| = 2.5$, $|35-27.5| = 7.5$. Sum = 20. MAD = $20/4 = 5$.
- 25) **Choice B is correct.** (M.8.25) Even numbers on a die: 2, 4, 6. That's 3 out of 6 outcomes, so $P(\text{even}) = \frac{3}{6} = \frac{1}{2}$.
- 26) **Choice B is correct.** (M.8.26) Count the cells in the table: 3 numbers $\times$ 2 letters = 6 total outcomes, shown as rows and columns.



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Hi, Confident Learner!

◇ This broad and demanding book gave you seven strong Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Grade 8 math can feel big because it connects real numbers and exponents with linear equations, systems, functions, transformations, geometry, and data.

◇

★ **Remember this:** But big topics become manageable when you practice one skill at a time. That is what you have been doing with every test in this book. ★

Confidence Builders

- **Know the Goal:** Identify what the question asks.
- **Use Vocabulary:** Math words point to math actions.
- **Show Work:** Give yourself something to check.
- **Celebrate Effort:** Practice is proof that you are moving.

Grade 8 test-day tip: When reviewing, do not only mark wrong answers. Write one sentence about what you learned from each one.

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

Jay Daie

Your Confidence Coach

PRACTICE TODAY SUCCEED TOMORROW!

Give your child the confidence and skills they need with **7 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!

GRADE 8

Practice
Today
Succeed
Tomorrow!

Algebra

Geometry

Statistics

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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