

WASHINGTON

Smarter Balanced

GRADE 8 MATH

PRACTICE TESTS

5

PRINTED
TESTS

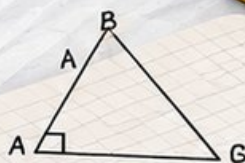


2 ONLINE
TESTS

**Standards Aligned
Problem Solving For
Comprehensive Assessment Programs**



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

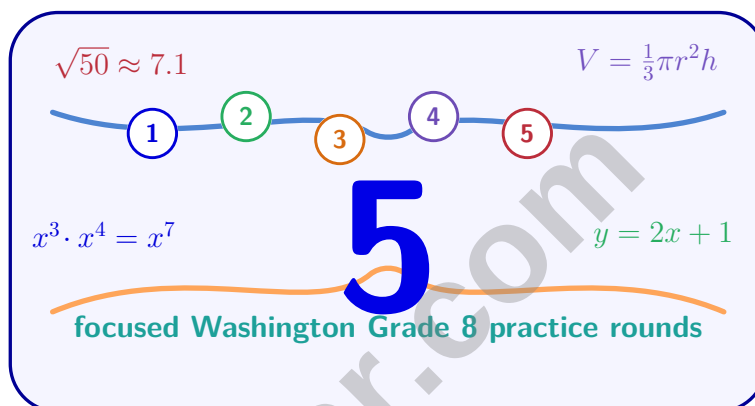


$$a^2 + b^2 = c^2$$



5 Washington Smarter Balanced Grade 8 Math Practice Tests

Focused Smarter Balanced Prep for Equations, Geometry, and Statistics



Five 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!

Five focused rounds for sharper Smarter Balanced math thinking

This book gives you five 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 five-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?

Five Smarter Balanced tests, 200 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–5	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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For more practice
& answers

Table of Contents

★ Practice Test 1	_____	15
★ Practice Test 2	_____	31
★ Practice Test 3	_____	46
★ Practice Test 4	_____	62
★ Practice Test 5	_____	79
Practice Test Answer Keys	_____	94
Practice Test Answers and Explanations	_____	98

1) Multiply: $(x + 2)(x + 6)$.

☐ A. $x^2 + 8x + 12$

☐ B. $x^2 + 12$

☐ C. $x^2 + 6x + 8$

☐ D. $x^2 + 2x + 6$

2) Simplify $\frac{12a^6b^{-2}}{3a^2b^3}$.

☐ A. $4a^8b$

☐ B. $9a^4b^5$

☐ C. $\frac{12a^8}{b^6}$

☐ D. $4a^4b^{-5}$ or $\frac{4a^4}{b^5}$

3) Which scenario describes a negative slope?

☐ A. Population increases each year

☐ B. Temperature increases over time

☐ C. Your bank account grows with deposits

☐ D. Water drains from a tank over time

4) Sarah is 5 years older than Tom. In 5 years, the sum of their ages will be 45. How old is Tom now?

☐ A. 12

☐ B. 18

☐ C. 15

☐ D. 20

5) The table shows a function. Find $f(0)$.

x	-1	0	1	2
$f(x)$	2	3	4	5

☐ A. 3

☐ B. 2

☐ C. 4

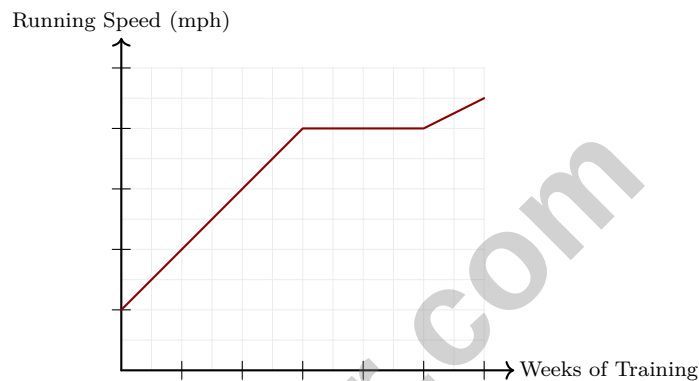
☐ D. 0



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6) A student is given the equation $y = 5x + 8$ and claims the slope is 8 and the y -intercept is 5. What is the student's error?

- ☐ A. The student reversed the slope and intercept.
- ☐ B. The student added slope and intercept incorrectly.
- ☐ C. The student forgot to simplify the equation.
- ☐ D. The student mixed up x and y values.

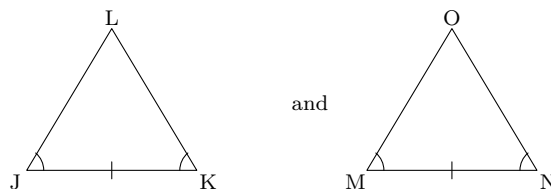


7)

A runner trains for 6 weeks. Speed increases for the first 3 weeks, stays constant for 2 weeks (maintenance phase), then improves slightly. During weeks 3–5, what is the runner's speed trend?

- ☐ A. Speed continues to increase
- ☐ B. Speed remains constant
- ☐ C. Speed decreases
- ☐ D. Speed fluctuates randomly

8) Triangle JKL is congruent to triangle MNO. Which congruence statement is correct?

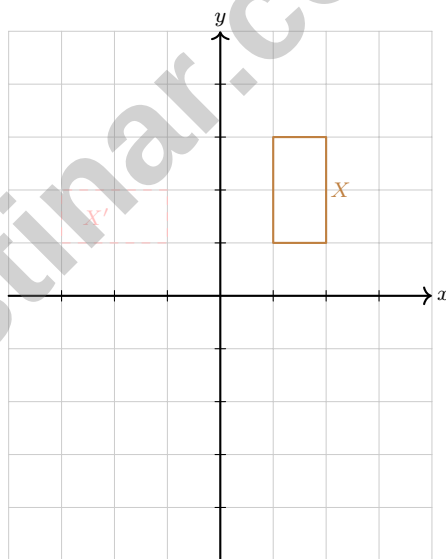


- ☐ A. Triangle $JKL \cong$ Triangle MNO
- ☐ B. Triangle $JKL \cong$ Triangle MON
- ☐ C. Triangle $JKL \cong$ Triangle NOM
- ☐ D. Triangle $JKL \cong$ Triangle ONM



- 9) Solve the system $\begin{cases} 2x + y = 5 \\ x - y = 4 \end{cases}$ by elimination.

- 10) In a function, how many outputs can each input have?



11)

Shape X (brown) is rotated 90° counterclockwise about the origin to produce X' (pink). Which vertex of X' corresponds to the vertex at $(2, 1)$ in X ?

- ☐ A. $(-1, 2)$ ☐ C. $(1, -2)$
☐ B. $(-2, 1)$ ☐ D. $(-3, 1)$



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

- ☐ A. Approximately 4.5 ☐ C. Approximately 3.4
☐ B. Exactly 8 ☐ D. Exactly 4

2) Factor completely: $6x^2 + 12x + 6$.

- ☐ A. $6(x^2 + 2x + 1)$ ☐ C. $2(3x^2 + 6x + 3)$
☐ B. $6(x + 1)^2$ ☐ D. $3(2x + 2)^2$

3) The table below shows costs. Identify whether the relationship is linear.

Quantity	1	2	3	4
Cost (\$)	12	24	36	48

- ☐ A. Yes, each item costs \$12 ☐ C. No, costs only go up
☐ B. No, the cost is too high ☐ D. Yes, because the total cost increases

4) Simplify $\frac{m^8}{m^5} \cdot m^2$.

- ☐ A. m^{15} ☐ C. m^{13}
☐ B. m^1 ☐ D. m^5

5) A water tank is being drained at a constant rate. The relationship between time and remaining water is shown:

Time (min)	5	15	25
Water (gal)	60	40	20

What is the slope (rate of drainage)?

- ☐ A. -2 gallons per minute ☐ C. -3 gallons per minute
☐ B. 2 gallons per minute ☐ D. 60 gallons per minute



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6) To find the number of \$0.50 postage stamps and \$0.37 postage stamps that total \$3.74 with 10 stamps, which approach is best?

- ☐ A. Guess and check
 ☐ C. Solving a system of equations
☐ B. Proportional reasoning
 ☐ D. Trial by tables

7) Calculate $\frac{9.6 \times 10^8}{3.2 \times 10^5}$ and express in scientific notation.

8) The table shows a linear function $m(x)$:

x	0	2	4	6
$m(x)$	5	11	?	23

What is $m(4)$?

- ☐ A. 15
 ☐ C. 17
☐ B. 16
 ☐ D. 18

9) Solve: $\begin{cases} y = \frac{1}{3}x + 2 \\ y = -\frac{2}{3}x + 5 \end{cases}$

- ☐ A. $(2, 7/3)$
☐ C. $(1, 7/3)$
☐ B. $(4, 10/3)$
☐ D. $(3, 3)$



- 1) What is the relationship between an interior angle and its adjacent exterior angle of a polygon?
- ☐ A. They are equal. ☐ C. They sum to 360° .
☐ B. They sum to 180° . ☐ D. The interior angle is always larger.
- 2) A loan of \$5,000 at 5% simple interest is repaid in 4 equal annual installments. What is the total amount paid?
- ☐ A. \$5,000 ☐ C. \$6,000
☐ B. \$5,500 ☐ D. \$6,250
- 3) Simplify $((d^2)^2)^3$.
- ☐ A. d^7 ☐ C. d^6
☐ B. d^8 ☐ D. d^{12}
- 4) A cube has an edge length of 4 units. What is its volume?
- ☐ A. 16 cubic units ☐ C. 48 cubic units
☐ B. 24 cubic units ☐ D. 64 cubic units
- 5) $(4.0 \times 10^5) + (6.0 \times 10^4) = ?$
- ☐ A. 10×10^4 ☐ C. 1.0×10^6
☐ B. 10×10^5 ☐ D. 4.6×10^5
- 6) A proportional relationship is described by $y = 4x$. What is the unit rate?
- ☐ A. 1 ☐ C. 4
☐ B. 2 ☐ D. 8



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7) Which expression expands to $x^2 + 20x + 100$?

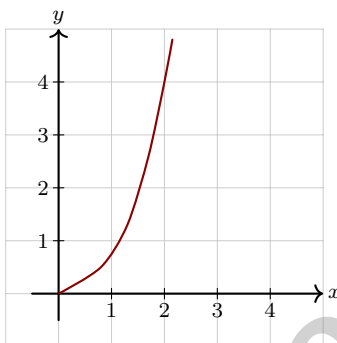
☐ A. $2(x + 10)^2$

☐ C. $(x + 10)(x + 100)$

☐ B. $(x + 10)^2$

☐ D. $(x + 50)^2$

8) Which graph represents a NONLINEAR function?

☐ A. Yes, the curve is parabolic☐ C. Yes, it only has positive y -values☐ B. No, it starts at the origin☐ D. No, the points are integers

9) A swimming pool is being drained. The water level drops $\frac{1}{2}$ foot every $\frac{1}{4}$ hour. What is the slope?

☐ A. -2 feet per hour☐ C. $-\frac{1}{8}$ feet per hour☐ B. 2 feet per hour☐ D. $\frac{1}{8}$ feet per hour

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



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 A is correct.** (8.EE.C.7) FOIL: $(x+2)(x+6) = x^2 + 6x + 2x + 12 = x^2 + 8x + 12$.
- 2) **Choice D is correct.** (8.EE.A.1) Coefficients: $\frac{12}{3} = 4$. Variables: $a^{6-2} = a^4$ and $b^{-2-3} = b^{-5}$. Result: $4a^4b^{-5}$ or $\frac{4a^4}{b^5}$.
- 3) **Choice D is correct.** (8.EE.B.5) Negative slope means as x increases, y decreases. Water draining means the amount in the tank decreases over time. All other options describe increasing quantities.
- 4) **Choice C is correct.** (8.EE.C.8c) Let t = Tom's current age. Sarah's current age is $t + 5$. In 5 years, their ages are $t + 5$ and $t + 10$, so $(t + 5) + (t + 10) = 45$. Then $2t + 15 = 45$, so $t = 15$.
- 5) **Choice A is correct.** (8.F.A.1) Look up $x = 0$ in the table; the corresponding $f(x)$ value is 3.
- 6) **Choice A is correct.** (8.F.B.4) In $y = mx + b$, the slope is $m = 5$ and the y -intercept is $b = 8$. The student swapped them.
- 7) **Choice B is correct.** (8.F.B.5) The graph shows a flat horizontal line from week 3 to week 5 at 4 mph, indicating no change in speed. This is the maintenance phase after rapid early gains.
- 8) **Choice A is correct.** (8.G.A.2) 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 $\triangle JKL \cong \triangle MNO$.
- 9) **The correct answer is $(3, -1)$.** (8.EE.C.8a) Add the equations: $(2x + y) + (x - y) = 5 + 4$, so $3x = 9$, giving $x = 3$. Substitute: $3 - y = 4$, so $y = -1$.
- 10) **The correct answer is 1.** (8.F.A.1) A relation is a function when each input has exactly one output.
- 11) **Choice A is correct.** (8.G.A.3) Under 90° counterclockwise rotation, $(x, y) \rightarrow (-y, x)$. So $(2, 1) \rightarrow (-1, 2)$.
- 12) **Choice C is correct.** (8.G.A.5) In a right triangle, the two acute angles are complementary: $38 + x = 90$, so $x = 52^\circ$.
- 13) **Choice A is correct.** (8.G.B.6, 8.G.B.7) Check: $25 + 100 = 125$, so $5^2 + 10^2 = (\sqrt{125})^2$. Note that $\sqrt{125} = 5\sqrt{5}$. This is a valid right triangle using the converse theorem.
- 14) **Choice A is correct.** (8.G.B.8) $d = \sqrt{(2 - (-4))^2 + (7 - (-1))^2} = \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10$.
- 15) **Choice B is correct.** (8.G.B.7) When corresponding angles are not congruent, the lines are not parallel. Corresponding angles are congruent only when lines are parallel.
- 16) **Choice C is correct.** (8.G.C.9) $V_A = \frac{1}{3} \times 16 \times 9 = 48 \text{ cm}^3$. $V_B = \frac{1}{3} \times 64 \times 18 = 384 \text{ cm}^3$. Ratio: $\frac{384}{48} = 8$. When linear scale is $2\times$, volume scales by $2^3 = 8\times$.
- 17) **Choice B is correct.** (8.G.B.7) Two congruent right triangles form a rectangle. Area = $5 \times 12 = 60 \text{ ft}^2$.
- 18) **Choice B is correct.** (8.G.A.5) The sum for a hexagon is $(6 - 2) \times 180 = 720^\circ$. Each angle is $\frac{720}{6} = 120^\circ$.
- 19) **Choice B is correct.** (8.SP.A.1) As speed increases, time to reach a destination decreases—a clear negative correlation. The other choices show positive or no clear correlation.
- 20) **Choice B is correct.** (8.SP.A.4) This is a column-conditional frequency. Among phone owners (253 total), ages 13–17 number 175. Relative frequency: $\frac{175}{253} \approx 0.69$.
- 21) **Choice C is correct.** (8.G.B.8) Absolute deviations: $|15 - 21| = 6$, $|18 - 21| = 3$, $|21 - 21| = 0$, $|24 - 21| = 3$, $|27 - 21| = 6$. Sum = 18. MAD = $18/5 = 3.6$.
- 22) **The correct answer is A, D.** (8.EE.B.5) Line 1: $k = \frac{6}{4} = 1.5$, so $y = 1.5x$ (\$1.50/lb). Line 2: $k = \frac{12}{6} = 2$, so $y = 2x$ (\$2.00/lb). A is correct (Line 1 equation and price). D is correct (Line 2 has greater slope: $2 > 1.5$). C is wrong (Line 2 is steeper, not Line 1). B is correct but not a correct pair; E is subjective (worse deal, not better). Answer: A and D.
- 23) **Choice B is correct.** (8.EE.C.7b) Choose from 3 math classes and 2 science classes: $3 \times 2 = 6$ possible combinations.
- 24) **Choice D is correct.** (8.SP.A.2) A negative trend shows that warmer months have lower heating costs, a natural relationship that does not imply causation.
- 25) **The correct answer is 25.** (8.F.A.2) $S_X(w) = 10w$, $S_Y(w) = 50 + 8w$. Equal when $10w = 50 + 8w \Rightarrow w = 25$.
- 26) **Choice A is correct.** (8.G.A.4) With center at $(2, 1)$: displacement from center to $(4, 3)$ is $(2, 2)$. Scale by factor 2: $(4, 4)$. New point is $(2, 1) + (4, 4) = (6, 5)$.



Hi, Persistent Problem Solver!

◇ Some Grade 8 questions ask you to hold several ideas in your mind at once. That can feel hard, and that is exactly why practice matters. ◇

★ **Remember this:** You showed persistence by continuing through the set. That habit is powerful because difficult problems often open after one more good attempt. You practiced across 5 full Grade 8 practice tests, and that repeated effort matters. ★

Persistence Tools

- **Try a Smaller Case:** Use an easier number to see the pattern.
- **Draw It:** Make the situation visible.
- **Restate It:** Say the question in your own words.
- **Check One Step:** Fix the first unclear place.

Grade 8 test-day tip: When stuck, do not restart everything. Find the first step you trust, then rebuild from there.

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

Jay Daie

Your Persistence Coach

Practice Today. Succeed Tomorrow!

Give your child the confidence and skills they need with **5 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 |
| ✓ Measurement & Data | ✓ And More! |

5
PRINTED
TESTS



2 ONLINE
TESTS



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