

8

Washington

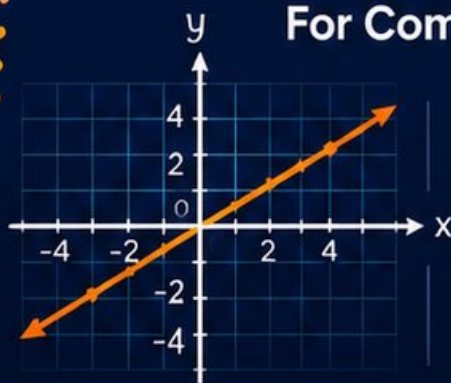
Smarter Balanced

GRADE 8

MATH

PRACTICE TESTS

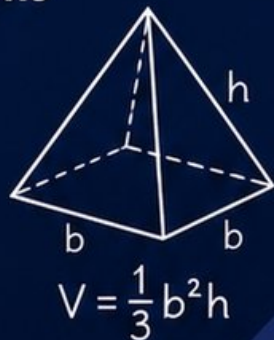
Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$A = \pi r^2$$

$$C = 2\pi r$$

$$V = \frac{1}{3}\pi r^2 h$$



$$V = \frac{1}{3}b^2 h$$



8

 PRINTED TESTS

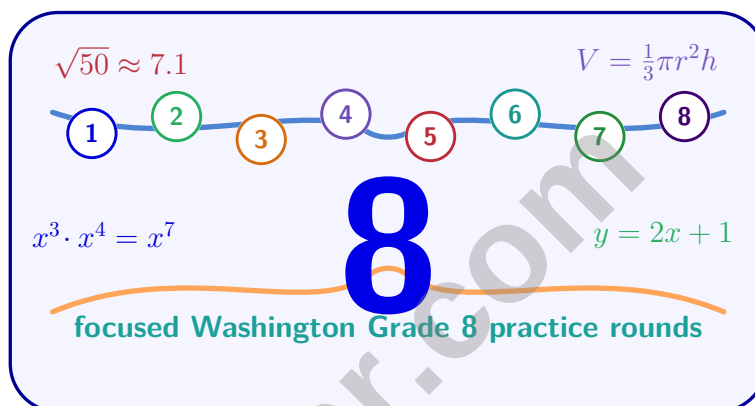
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 ONLINE TESTS

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

8 Washington Smarter Balanced Grade 8 Math Practice Tests

Washington Practice for Functions, Geometry, Data, and Linear Models



Eight 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!

Eight focused rounds for sharper Smarter Balanced math thinking

This book gives you eight 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

An eight-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?

Eight Smarter Balanced tests, 320 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 7–8	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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& answers

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- 1) Pyramid A and Pyramid B both have square bases with edge 5 cm. Pyramid A has height 6 cm; Pyramid B has height 12 cm. What is the difference in their volumes?

☐ A. 25 cm^3
☐ C. 100 cm^3
☐ B. 50 cm^3
☐ D. 150 cm^3

- 2) Triangle PQR is congruent to triangle STU. In triangle PQR, side $PQ = 9 \text{ cm}$ and side $QR = 7 \text{ cm}$. If side $ST = 9 \text{ cm}$, find the length of the side that corresponds to QR .

- 3) A two-way table shows 160 athletes:

	Morning	Evening	Total
Track	50	30	80
Swim	35	45	80
Total	85	75	160

What percentage of all athletes train in the morning on the track team?

☐ A. 31.25%
 ☐ C. 58.8%
☐ B. 37.5%
 ☐ D. 62.5%

- 4) 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



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5) The data set is $\{1, 2, 3, 4, 5, 6\}$. What is the MAD? (Mean = 3.5)

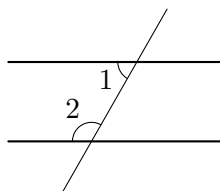
☐ A. 1.5

☐ C. 1.75

☐ B. 2

☐ D. 2.5

6) Which angle pair is formed when a transversal crosses two parallel lines and both angles are on the same side of the transversal and between the lines?

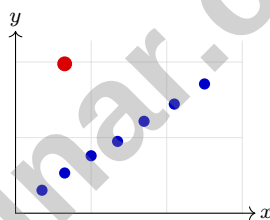


☐ A. Alternate interior angles

☐ C. Co-interior angles

☐ B. Corresponding angles

☐ D. Alternate exterior angles

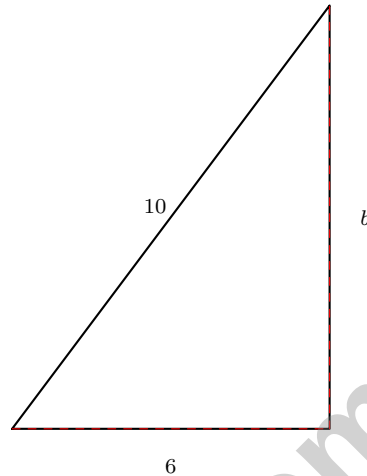


7)

In a scatter plot, a point is located far from all the other points and does not follow the general trend. What is this point called?



- 8) The hypotenuse of a right triangle is 10 units and one leg is 6 units. What is the length of the other leg?



- ☐ A. 4 units
- ☐ B. 8 units
- ☐ C. $\sqrt{63}$ units
- ☐ D. 16 units
- 9) A restaurant offers 10 appetizers, 12 mains, 5 sides, and 6 desserts. A complete meal includes one appetizer, one side, and one dessert. How many different complete meals can be ordered?
- ☐ A. $10 + 5 + 6 = 21$
- ☐ B. $10 \times 12 \times 5 \times 6 = 3,600$
- ☐ C. $10 \times 5 \times 6 = 300$
- ☐ D. $(10 + 12) \times 5 \times 6 = 660$
- 10) A student's grade model is $G = 2.5h + 55$, where G is the grade and h is hours spent studying. If the student studies for 12 hours, what is the predicted grade?



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1) A point $Q(6, 8)$ is dilated to $Q'(3, 4)$. If the dilation center is the origin, what is the scale factor?

☐ A. 2

☐ C. 3

☐ B. $\frac{1}{2}$
☐ D. $\frac{1}{3}$

2) A snowpile melts at a rate of 4 inches per day. If it starts at 60 inches, which equation models the height h after d days?

☐ A. $h = 60d - 4$
☐ C. $h = 4d + 60$
☐ B. $h = -4d + 60$
☐ D. $h = 60 - d$

3) A transformation maps $(-2, 5)$ to $(2, 5)$. Which transformation is this?

☐ A. Reflection across the y -axis

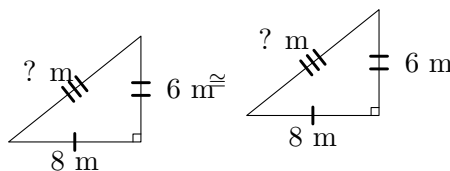
☐ C. Translation left 4

☐ B. Rotation 90° counterclockwise

☐ D. Dilation by scale factor 2

4) The elevation rises 500 feet over a horizontal distance of 2000 feet. What is the slope?

5) Two congruent right triangles are shown. Triangle 1 has legs of 6 m and 8 m. What is the hypotenuse of Triangle 2?


☐ A. 5 m

☐ C. 10 m

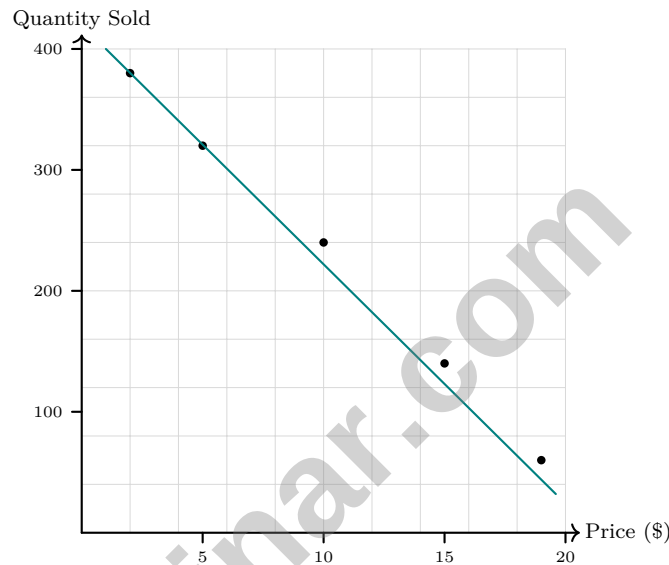
☐ B. 7 m

☐ D. 14 m


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- 6) A restaurant tracks 300 orders by meal type and customer type. Of 180 dine-in orders, 108 are from regular customers. What is the relative frequency of orders from regular customers among dine-in meals, as a decimal?

- ☐ A. 0.36 ☐ C. 0.54
☐ B. 0.45 ☐ D. 0.60

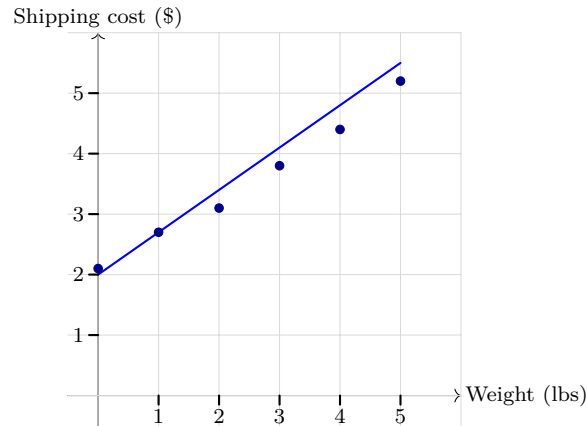


7)

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





1)

What is the y -intercept of the best-fit line?

☐ A. \$0☐ C. \$2.50☐ B. \$2☐ D. \$5

2) A figure in Quadrant I is reflected across the line $y = -x$. Which quadrant will the image be in?

☐ A. Quadrant I☐ C. Quadrant IV☐ B. Quadrant II☐ D. Quadrant III

3) Solve:
$$\begin{cases} y = 3x + 2 \\ 6x - 2y = 4 \end{cases}$$

☐ A. No solution☐ C. Infinitely many solutions☐ B. (0, 2)☐ D. (1, 5)

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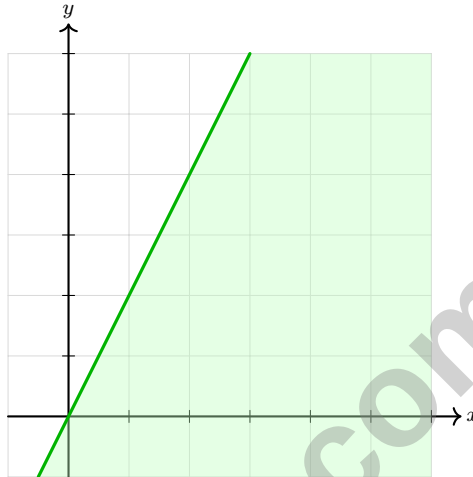
4) Write an inequality for: “A number increased by 6 is at most 15.”

☐ A. $x - 6 \leq 15$

☐ C. $x + 6 < 15$

☐ B. $6x \leq 15$

☐ D. $x + 6 \leq 15$



5)

The graph shows which inequality?

☐ A. $y > 2x$

☐ C. $y \geq 2x$

☐ B. $y < 2x$

☐ D. $y \leq 2x$

6) Function $h(x) = -2x + 7$ and function k shown in the table: $(0, 7)$, $(1, 5)$, $(2, 3)$.

Which statement is true?

x	0	1	2
$k(x)$	7	5	3

☐ A. h has a steeper slope than k .

☐ C. Both have equal slopes.

☐ B. k has a steeper slope than h .

☐ D. The slopes cannot be compared.



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 B is correct.** (8.G.C.9) $V_A = \frac{1}{3} \times 25 \times 6 = 50 \text{ cm}^3$. $V_B = \frac{1}{3} \times 25 \times 12 = 100 \text{ cm}^3$. Difference: $100 - 50 = 50 \text{ cm}^3$.
- 2) **The correct answer is 7.** (8.G.A.2) Since the triangles are congruent and PQ corresponds to ST (both equal 9 cm), the side QR corresponds to side TU . Therefore, $TU = QR = 7 \text{ cm}$.
- 3) **Choice A is correct.** (8.SP.A.4) Joint frequency of morning track athletes: $\frac{50}{160} = 0.3125 = 31.25\%$.
- 4) **Choice B is correct.** (8.SP.A.2) 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.
- 5) **Choice A is correct.** (8.G.B.8) Absolute deviations: $|1 - 3.5| = 2.5$, $|2 - 3.5| = 1.5$, $|3 - 3.5| = 0.5$, $|4 - 3.5| = 0.5$, $|5 - 3.5| = 1.5$, $|6 - 3.5| = 2.5$. Sum = 9. MAD = $9/6 = 1.5$.
- 6) **Choice C is correct.** (8.G.A.5) Co-interior angles (also called same-side interior or consecutive interior angles) are on the same side of the transversal and between the parallel lines.
- 7) **The correct answer is An outlier.** (8.SP.A.1) A point that lies far from the main pattern of data is called an outlier. It deserves investigation to understand why it differs from the trend.
- 8) **Choice B is correct.** (8.G.B.8) $10^2 = 6^2 + b^2$, so $100 = 36 + b^2$, thus $b^2 = 64$ and $b = 8$ units.
- 9) **Choice C is correct.** (8.EE.C.7b) Apply the Counting Principle: $10 \text{ appetizers} \times 5 \text{ sides} \times 6 \text{ desserts} = 300$ different meals.
- 10) **The correct answer is 85.** (8.SP.A.3) Substitute $h = 12$: $G = 2.5(12) + 55 = 30 + 55 = 85$.
- 11) **Choice C is correct.** (8.NS.A.1) For example, $\sqrt{2} \times \sqrt{8} = \sqrt{16} = 4$ (rational), but $\sqrt{2} \times \sqrt{3} = \sqrt{6}$ (irrational). So the product can be either.
- 12) **Choice D is correct.** (8.NS.A.1) The 6-digit repeating block means multiply by 1,000,000. Let $x = 0.\overline{285714}$. Then $1000000x = 285714.\overline{285714}$, so $999999x = 285714$ and $x = \frac{2}{7}$.
- 13) **Choice C is correct.** (8.NS.A.2) $\sqrt{5} \approx 2.24$, so $3\sqrt{5} \approx 3 \times 2.24 = 6.72$.
- 14) **Choice A is correct.** (8.EE.C.7) Distribute: $6x + 12 = 30$. Subtract 12: $6x = 18$. Divide by 6: $x = 3$.
- 15) **Choice C is correct.** (8.G.B.7) Interest: $I = 15000 \times 0.07 \times 5 = \$5,250$.
- 16) **Choice D is correct.** (8.EE.A.4) Multiply coefficients: $7.2 \times 1.5 = 10.8 = 1.08 \times 10^1$. Add exponents: $10^{5+3} = 10^8$. Combine: $1.08 \times 10^1 \times 10^8 = 1.08 \times 10^9$.
- 17) **Choice C is correct.** (8.EE.B.6) Perpendicular slopes are negative reciprocals. The negative reciprocal of $\frac{3}{4}$ is $-\frac{4}{3}$.
- 18) **Choice A is correct.** (8.EE.C.8a) Check (1, 3) in both equations: $3 = -2(1) + 5$ and $3(1) + 3 = 6$. So (1, 3) is the solution.
- 19) **Choice A is correct.** (8.EE.C.8b) Subtract 7: $-4x \leq -12$. Divide by -4 (FLIP): $x \geq 3$.
- 20) **Choice A is correct.** (8.G.B.6, 8.G.B.7) From $10^2 + b^2 = 26^2$, we get $100 + b^2 = 676$, so $b^2 = 576$ and $b = 24$ (scaled 5-12-13 triple).
- 21) **The correct answer is A,D.** (8.F.B.4) Option A is correct because the slope of d_1 is 3 km/h. Option D is correct because $3 > 2$, so Hiker 1 travels faster. Hiker 2 starts 5 km from the trailhead, Hiker 1 starts 2 km from the trailhead, and the hikers are at the same distance when $t = 3$, not $t = 2$.
- 22) **Choice D is correct.** (8.NS.A.2) $5.9^2 = 34.81$ and $6^2 = 36$. Since 35 is closer to 34.81 than to 36, $\sqrt{35} \approx 5.9$.
- 23) **Choice D is correct.** (8.EE.A.1) $(-3)^{-2} = \frac{1}{(-3)^2} = \frac{1}{9}$ (even exponent makes it positive).
- 24) **Choice C is correct.** (8.EE.A.2) $14 \times 14 = 196$, so $\sqrt{196} = 14$.
- 25) **Choice D is correct.** (8.EE.A.3) Move the decimal 8 places left to get 1.2; the exponent is 8.
- 26) **Choice C is correct.** (8.EE.B.5) $y = 2.54(10) = 25.4 \text{ cm}$. The unit rate is 2.54 cm per inch.
- 27) **Choice C is correct.** (8.EE.C.7) FOIL: $(3x + 4)(2x - 1) = 6x^2 - 3x + 8x - 4 = 6x^2 + 5x - 4$.
- 28) **Choice A is correct.** (8.F.A.1) 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.



Hi, Calm Solver!

◇ This wide-ranging book gave you eight serious Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. A calm mind can see choices more clearly. That matters in Grade 8, where one problem may have several possible entry points. ◇

★ **Remember this:** You practiced building calm by doing full tests. Each completed page is rehearsal for staying steady when the real test feels serious. ★

Calm-Test Moves

- **Pause:** Give your brain one quiet second.
- **Choose:** Pick the first useful step.
- **Continue:** Do not demand perfection immediately.
- **Check:** Use review time wisely.

Grade 8 test-day tip: If you feel rushed, slow your reading for one sentence. Clear reading saves time.

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

Jay Daie

Your Calm-Test Coach

PRACTICE TODAY, SUCCEED TOMORROW!

Give your child the confidence and skills they need with **8 full-length Grade 8** Math practice tests that mirror 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.



BUILD SKILLS & BOOST CONFIDENCE

Strengthen understanding and feel prepared for test day.



COVERS ALL ESSENTIAL TOPICS

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



2 EXTRA ONLINE PRACTICE TESTS INCLUDED!

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More Practice. More Confidence.
Better Results.