

8

Hawaii

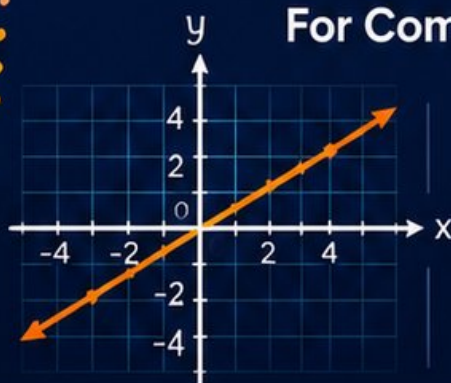
Smarter Balanced

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$A = \pi r^2$$

$$C = 2\pi r$$

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



8 PRINTED
TESTS



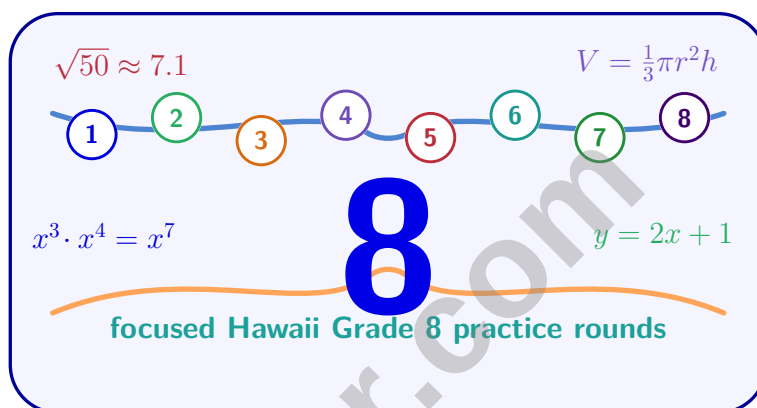
2 ONLINE
TESTS



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

8 Hawaii Smarter Balanced Grade 8 Math Practice Tests

Hawaii Practice for Grade 8 Functions, Geometry, and Data Thinking



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, Hawaii 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 Hawaii 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.

Hawaii 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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1) A garden uses 3 gallons of water per crimson plant. After planting 12 crimson plants, how many gallons are needed?

☐ A. 24 gallons

☐ C. 36 gallons

☐ B. 30 gallons

☐ D. 40 gallons

2) When the correlation between two variables is weak, the trend line:

☐ A. Has a slope of zero

☐ D. Will be very accurate for predictions

☐ B. Should not be used at all

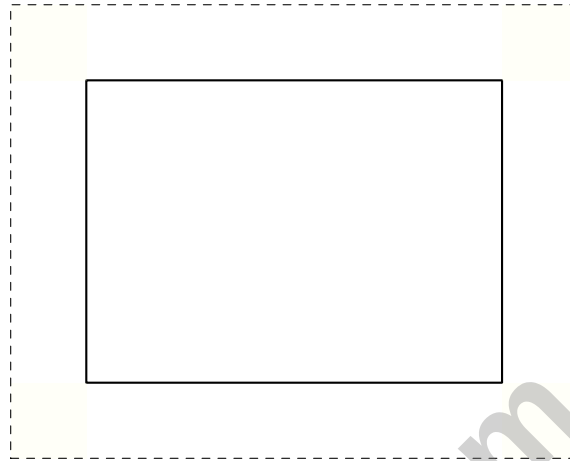
☐ C. Will have large residuals and less reliable predictions

3) Vertex V of a polygon is at $(-4, 6)$. The polygon is rotated 90° counterclockwise about the origin. What is the ordered pair for the image of V ?

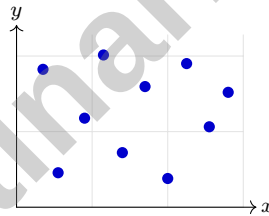


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- 4) A floor has a rectangular base (15 ft by 12 ft) with four corner triangles cut out (each 2 ft by 2 ft). What is the remaining area?



- ☐ A. 144 ft^2 ☐ C. 176 ft^2
☐ B. 172 ft^2 ☐ D. 180 ft^2



5)

A scatter plot shows two variables with points scattered randomly in all directions with absolutely no visible trend or pattern. What does this indicate about the relationship between the variables?

- ☐ A. No correlation ☐ C. Strong negative correlation
☐ B. Strong positive correlation ☐ D. Perfect linear relationship



6) In a two-way table of 500 voters by income and voting choice:

	Yes	No	Total
High Income	150	100	250
Low Income	120	130	250
Total	270	230	500

A student claims: “Since both income groups total 250, there is no association.” Is this reasoning correct?

- ☐ A. Yes; equal row totals guarantee independence.
 ☐ C. Yes; balancing the sample sizes shows no bias.
- ☐ B. No; equal row totals don't ensure equal conditional frequencies.
 ☐ D. No; we must check the yes vote totals, which differ.
- 7) Two classes have the same mean test score of 75. Class A has $MAD = 3$, and Class B has $MAD = 8$. What does this tell us?
- ☐ A. Class B has higher individual scores
 ☐ C. Class A has more consistent scores
- ☐ B. Class A has more students
 ☐ D. Class B performed better overall
- 8) A bag contains 6 cards labeled 1, 2, 3, 4, 5, 6. If two cards are drawn with replacement, how many total outcomes are possible?
- ☐ A. 12
 ☐ C. 36
- ☐ B. 30
 ☐ D. 42
- 9) A sandwich shop offers 2 types of bread and 7 topping options. How many different one-topping sandwiches can be made?
- ☐ A. $2 + 7 = 9$
☐ C. $7^2 = 49$
- ☐ B. $2 \times 7 = 14$
☐ D. $2 \times 7 \times 7 = 98$



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- 1) A 270° counterclockwise rotation about the origin is applied to the point $(4, -3)$. What is the image?

☐ A. $(-3, -4)$

☐ B. $(3, 4)$

☐ C. $(-4, 3)$

☐ D. $(4, 3)$

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

☐ A. $(x + 9)(x - 4)$

☐ B. $(x - 9)(x + 4)$

☐ C. $(x + 12)(x - 3)$

☐ D. $(x + 6)(x - 6)$

- 3) A town's population P (in thousands) at year t (years since 2010) follows this data:

Year since 2010 (t)	0	3	6	9
Population (P , thousands)	45	51	57	63

What is the rate of change of the population per year?

☐ A. 2 thousand per year

☐ B. 3 thousand per year

☐ C. 6 thousand per year

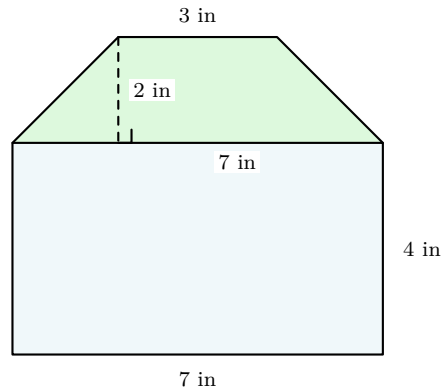
☐ D. 9 thousand per year

- 4) A line passes through $(0, 2)$ and $(4, 10)$. Find the slope.



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- 5) An irregular polygon is decomposed into a rectangle (7 in by 4 in) and a trapezoid (bases 7 in and 3 in, height 2 in). Find the total area.



- ☐ A. 28 in^2 ☐ C. 42 in^2
☐ B. 38 in^2 ☐ D. 50 in^2
- 6) A residual is the vertical distance between a data point and the trend line. Which set of residuals indicates the BEST fit?
- ☐ A. Residuals of 15, -12, 18, -14, 20 ☐ C. Residuals of -20, -18, 22, 25, 19
☐ B. Residuals of -1, 0, 1, 0, -1 ☐ D. Residuals of -5, -4, 3, 4, 2
- 7) A cube with edge 2 m is attached to a rectangular prism with dimensions $4 \times 2 \times 2$ m (where the cube shares a 2×2 face). If we ignore the shared face, what is the total surface area of the composite solid?
- ☐ A. 40 m^2 ☐ C. 64 m^2
☐ B. 56 m^2 ☐ D. 72 m^2



1) Which type of transformation maps a figure to a congruent image without changing its position relative to orientation?

☐ A. Reflection

☐ C. Translation

☐ B. Rotation

☐ D. Dilation

2) A line parallel to $y = 5x - 1$ passes through $(0, 3)$. What is its y -intercept?

3) Simplify $7^{-4} \cdot 7^6$.

☐ A. 7^{-2}

☐ C. 7^3

☐ B. 7^{-10}

☐ D. 7^2

4) $\frac{5 \times 10^{-2}}{2.5 \times 10^{-5}} = ?$

☐ A. 0.2×10^3

☐ C. 2×10^3

☐ B. 2.5×10^{-7}

☐ D. 7.5×10^{-7}

5) Which pair of points lies on a proportional relationship through the origin?

☐ A. $(2, 5)$ and $(4, 9)$

☐ C. $(1, 3)$ and $(2, 5)$

☐ B. $(3, 12)$ and $(5, 21)$

☐ D. $(2, 6)$ and $(4, 12)$

6) Solve:
$$\begin{cases} x = 2y + 1 \\ 3x - y = 8 \end{cases}$$

☐ A. $(1, 0)$

☐ C. $(5, 2)$

☐ B. $(7, 3)$

☐ D. $(3, 1)$



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7) Which statement correctly uses a test point to determine if $(3, 3)$ is in the solution region of $4x - 3y \geq 3$?

- ☐ A. $4(3) - 3(3) = 3$, so it is NOT in the region
- ☐ B. $4(3) - 3(3) = 3 \geq 3$ TRUE, so it IS in the region
- ☐ C. $4(3) - 3(3) = 12 \geq 3$ TRUE, so it IS in the region
- ☐ D. $4(3) - 3(3) = 0 \not\geq 3$, so it is NOT in the region

8) Function through $(1, 4)$ and $(3, 8)$. Slope is?

- ☐ A. 1
- ☐ B. 2
- ☐ C. 3
- ☐ D. 4

9) Solve for x : $3(x + 2) - 5 = x + 7$. Show all steps and verify your solution.

10) Which represents a LINEAR function?

- ☐ A. $y = 9x^2 - 4$
- ☐ B. $y = -12x - 1$
- ☐ C. $y = \sqrt{3x}$
- ☐ D. $y = \frac{6}{x}$



Hawaii 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 Hawaii Smarter Balanced practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** (8.EE.B.5) Proportional relationship: $y = 3x$. For $x = 12$: $y = 3(12) = 36$ gallons.
- 2) **Choice C is correct.** (8.SP.A.2) Weak correlation means data is scattered, with large residuals and less certainty in predictions made from the line.
- 3) **The correct answer is $(-6, -4)$.** (8.G.A.3) Using $(x, y) \rightarrow (-y, x)$: $(-4, 6) \rightarrow (-6, -4)$.
- 4) **Choice B is correct.** (8.G.B.7) Rectangle area = $15 \times 12 = 180 \text{ ft}^2$. Four corner triangles = $4 \times \frac{1}{2} \times 2 \times 2 = 8 \text{ ft}^2$. Remaining = $180 - 8 = 172 \text{ ft}^2$.
- 5) **Choice A is correct.** (8.SP.A.1) Points scattered randomly with no visible trend or pattern indicate no correlation between the variables. There is no identifiable relationship.
- 6) **Choice B is correct.** (8.SP.A.4) Equal row sizes do not imply independence. High-income voters vote yes at $\frac{150}{250} = 0.60$, while low-income at $\frac{120}{250} = 0.48$. Different conditional frequencies reveal association despite balanced margins.
- 7) **Choice C is correct.** (8.G.B.8) A smaller MAD (Class A = 3) indicates less variability and more consistency. Class B's larger MAD (8) shows greater spread in scores.
- 8) **Choice C is correct.** (8.G.B.7) With replacement, first draw has 6 choices, second draw has 6 choices. Total: $6 \times 6 = 36$ outcomes.
- 9) **Choice B is correct.** (8.EE.C.7b) Choose one bread and one topping: $2 \times 7 = 14$ different sandwiches.
- 10) **Choice D is correct.** (8.NS.A.2) From the table, $3^2 = 9$ and $4^2 = 16$. Since $9 < 11 < 16$, we have $3 < \sqrt{11} < 4$.
- 11) **Choice D is correct.** (8.NS.A.1) Both $\sqrt{15}$ and $\sqrt{24}$ are irrational because 15 and 24 are not perfect squares. The other pairs contain at least one rational number: $\sqrt{121} = 11$ (rational), $\sqrt{16} = 4$ (rational), and $-\frac{3}{7}$ (rational).
- 12) **Choice D is correct.** (8.NS.A.1) The multiplier is 10^n where n is the block length. For $n = 1$: $10^1 = 10$; for $n = 2$: $10^2 = 100$.
- 13) **Choice D is correct.** (8.NS.A.2) By the Pythagorean theorem, $\sqrt{3^2 + 4^2} = \sqrt{25} = 5$ units.
- 14) **Choice C is correct.** (8.G.B.7) Total paid: $600 \times 36 = \$21,600$. Finance charge: $21600 - 12000 = \$9,600$.
- 15) **Choice A is correct.** (8.EE.B.6) Substitute: $-3 = -\frac{3}{4}(4) + b$, so $-3 = -3 + b$, thus $b = 0$.
- 16) **The correct answer is 71.** (8.G.A.5) Base angles are equal. Let each be x° . Then $38 + 2x = 180 \Rightarrow 2x = 142 \Rightarrow x = 71^\circ$.
- 17) **Choice A is correct.** (8.EE.C.7) Substitution is the definitive test: $2(3) + 5 = 11$ ✓ and $2(4) + 5 = 13 \neq 11$ ✗. Student A is correct.
- 18) **Choice C is correct.** (8.EE.C.8b) Subtract 1: $2x \geq 8$. Divide by 2: $x \geq 4$.
- 19) **The correct answer is B, E.** (8.F.B.4) Option B is correct because the constant term 35 is the fixed monthly cost. Option E is correct because at $t = 0$, $C = 0.10(0) + 35 = 35$. The slope is 0.10, so the cost per text is \$0.10, not \$0.35.
- 20) **Choice C is correct.** (8.EE.A.1) When multiplying powers with the same base, add exponents: $3^2 \cdot 3^5 = 3^{2+5} = 3^7$.
- 21) **Choice D is correct.** (8.EE.C.8a) Subtract the second equation from the first: $(3x + 2y) - (3x - y) = 12 - 12$, so $3y = 0$ and $y = 0$. Substitute into $3x - y = 12$: $3x = 12$, so $x = 4$. Solution: $(4, 0)$.
- 22) **Choice B is correct.** (8.G.A.2) Congruent figures have equal corresponding sides. The side corresponding to PQ in pentagon UVWXY is UV , and it must equal 8 cm.
- 23) **Choice C is correct.** (8.G.B.6, 8.G.B.7) Check option C: $9^2 + 12^2 = 81 + 144 = 225 = 15^2$. This is the 3-4-5 triple scaled by 3.
- 24) **The correct answer is 132.** (8.G.B.7) Let the angle be x . Its supplement is $180 - x$. Since $x = 3(180 - x) - 12$, we get $x = 540 - 3x - 12$, so $4x = 528$ and $x = 132$.
- 25) **Choice A is correct.** (8.G.A.5) The sum of interior angles in a hexagon is 720° . The known angles add to $85 + 125 + 140 + 110 + 98 = 558^\circ$, so $x = 720 - 558 = 162^\circ$.
- 26) **Choice D is correct.** (8.EE.A.2) Solve $x^2 = 144$ by taking the positive square root: $x = \sqrt{144} = 12$.
- 27) **Choice C is correct.** (8.EE.A.3) Move the decimal 8 places right: $1.496 \times 10^8 = 149,600,000 \text{ km}$.



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The Power of Showing Work

Hi, Organized Solver!

◇ You practiced Grade 8 skills that often require more than one step. That means your written work matters. ◇

★ **Remember this:** Showing work is not extra. It is how you track your thinking, find errors, and prove that your answer did not happen by luck. You practiced across 8 full Grade 8 practice tests, and that repeated effort matters. ★

Organized Work Habits

- **One Line Per Step:** Keep the path readable.
- **Box the Answer:** Make the final result easy to find.
- **Use Labels:** Tell what each value represents.
- **Check the Path:** Follow your steps backward if needed.

Grade 8 test-day tip: When a problem has several steps, write less on each line. Space makes checking easier.

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

Jay Daie

Your Organized-Work 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!



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Better Results.