

3

Hawaii

$$a^2 + b^2 = c^2$$
$$\sqrt{x}$$

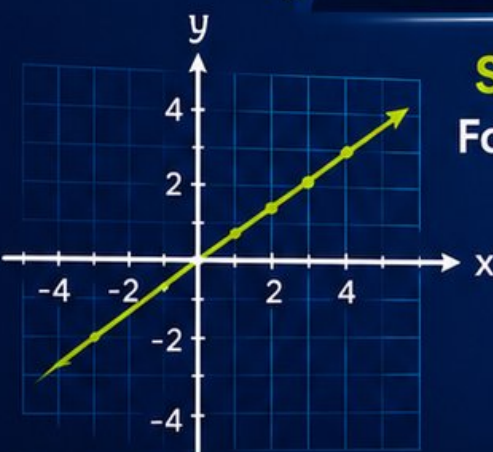
Smarter Balanced

GRADE 8

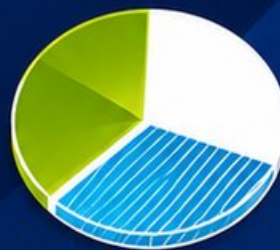
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$V = s^3$$



$$y = mx + b$$
$$2x + 5 = 13$$
$$x = 4$$



3

 PRINTED TESTS

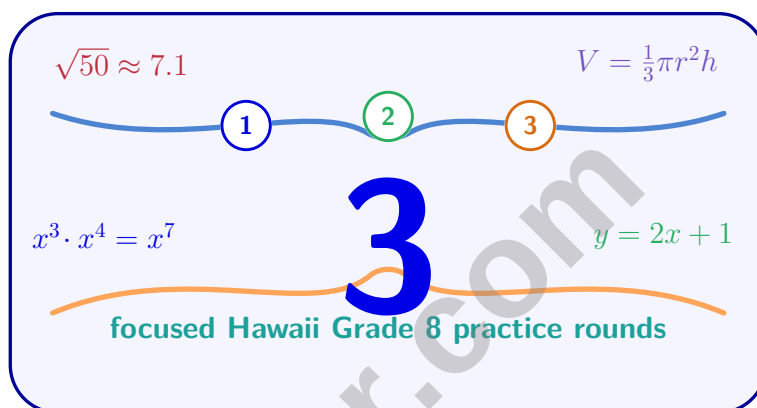
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 ONLINE TESTS

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

3 Hawaii Smarter Balanced Grade 8 Math Practice Tests

Grade 8 Hawaii Math Review for Skills, Stamina, and Strategy



Three 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!

Three focused rounds for sharper Smarter Balanced math thinking

This book gives you three 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

A three-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?

Three Smarter Balanced tests, 120 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Test 3	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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Table of Contents



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1) Which is the best estimate of $\pi + \sqrt{10}$?

☐ A. $3.1 + 3.1 = 6.2$

☐ C. $4 + 4 = 8$

☐ B. $\pi + 10 = 13.14$

☐ D. $3.14 + 3.16 = 6.30$

2) A rectangular prism has length 10 ft, width 5 ft, and surface area 250 ft^2 . What is its height?

☐ A. 3 ft

☐ C. 5 ft

☐ B. 4 ft

☐ D. 6 ft

3) Which transformation does **NOT** preserve both distance and angle measure?

☐ A. Translation

☐ C. Rotation

☐ B. Reflection

☐ D. Dilation

4) A line has equation $y = \frac{3}{2}x + 5$. Which statement is true?

☐ A. The line has slope 5 and passes through $(0, \frac{3}{2})$

☐ C. The line has y -intercept $\frac{3}{2}$

☐ B. The line is perpendicular to $y = \frac{2}{3}x + 1$

☐ D. The line passes through $(2, 8)$

5) Solve for x : $6x + 2 = 5x + 9$

☐ A. $x = 7$

☐ C. $x = 11$

☐ B. $x = -7$

☐ D. $x = 2$

6) A student writes: "Solve $-5(x - 1) < 10$: Divide by -5 to get $x - 1 < -2$, then $x < -1$." What is the error?

☐ A. Added instead of subtracting

☐ C. Did not distribute correctly

☐ B. No error

☐ D. Did not flip the inequality



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7) A cone has radius 9 cm and height 14 cm. Approximately, what is its volume? (Use $\pi \approx 3.14$.)

☐ A. 594.12 cm^3

☐ C. 2373.84 cm^3

☐ B. 1186.92 cm^3

☐ D. 1782.36 cm^3

8) Using the model $y = 2x - 3$, suppose the actual data point is $(5, 7)$, but the model predicts $y = 7$ at $x = 5$. What is the residual (error)?

☐ A. 0

☐ C. -2

☐ B. 2

☐ D. 7

9) In the list 5.2×10^{-2} , 5.2×10^0 , 5.2×10^2 , 5.2×10^{-1} , what is the exponent of the smallest number?

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

☐ A. $4a^8b$

☐ C. $\frac{12a^8}{b^6}$

☐ B. $9a^4b^5$

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

11) Express $0.12\overline{3}$ as a fraction.



12) What is $\sqrt[3]{64}$?

☐ A. 3

☐ C. 5

☐ B. 6

☐ D. 4

13) The energy released by a small explosion is about 2×10^{12} joules. A TNT equivalent is often measured where 1 kiloton TNT $\approx 4 \times 10^{12}$ joules. How many kilotons is the explosion?

☐ A. 2 kilotons

☐ C. 0.5 kilotons

☐ B. 5×10^1 kilotons

☐ D. 8×10^{23} kilotons

14) Which is smallest: $\sqrt{10}$, $\sqrt{19}$, or $\sqrt{35}$?



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1) Two parallel lines cut by a transversal create 8 angles. If one angle is 67° , which angle measure does NOT appear among the 8 angles?

☐ A. 67° ☐ C. 47° ☐ B. 113° ☐ D. Both 67° and 113° appear

2) Which statement about $\sqrt{2} + 1$ is correct?

☐ A. It is rational☐ C. It equals $\sqrt{3}$ ☐ B. It is between 0 and 1☐ D. It is irrational

3) Which value is equivalent to 7.5×10^6 ?

☐ A. 7.5,000☐ C. 75,000,000☐ B. 750,000☐ D. 7,500,000

4) Convert $0.2\overline{7}$ to a fraction in simplest form.

☐ A. $\frac{27}{100}$ ☐ C. $\frac{27}{90}$ ☐ B. $\frac{27}{99}$ ☐ D. $\frac{5}{18}$

5) A bank loan of \$10,000 at 5% simple interest is repaid in 5 equal annual installments. The total simple interest over the full term is \$2,500. How much principal and interest remains owed after making the first \$2,500 payment?

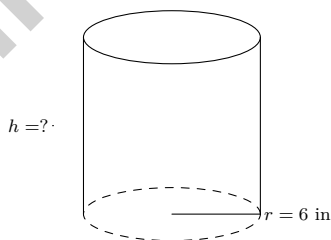
☐ A. \$8,000☐ C. \$10,000☐ B. \$8,500☐ D. \$9,500

6) Two rectangular prisms have the same volume of 120 cm^3 . Prism A has dimensions $10 \times 6 \times 2 \text{ cm}$. Prism B has dimensions $8 \times 5 \times 3 \text{ cm}$. Which prism has the greater surface area?

☐ A. Prism A with $SA = 184 \text{ cm}^2$ ☐ C. Prism B with $SA = 158 \text{ cm}^2$ ☐ B. Prism A with $SA = 244 \text{ cm}^2$ ☐ D. Prism B with $SA = 206 \text{ cm}^2$ 

- 7) A figure is first rotated 90° counterclockwise about the origin, then translated 3 units right. Which rule describes the image of the point (x, y) after both transformations?
- ☐ A. $(x, y) \rightarrow (-y + 3, x)$ ☐ C. $(x, y) \rightarrow (x + 3, -y)$
☐ B. $(x, y) \rightarrow (-y, x + 3)$ ☐ D. $(x, y) \rightarrow (-y - 3, x)$
- 8) A horizontal line passes through the point $(2, 5)$. What is the equation of this line?
- ☐ A. $x = 2$ ☐ C. $y = 2x + 5$
☐ B. $x = y$ ☐ D. $y = 5$
- 9) Solve for x : $2x + 8 = 20$
- ☐ A. $x = 6$ ☐ C. $x = 28$
☐ B. $x = 14$ ☐ D. $x = 4$
- 10) Solve: $2x - 6 \leq 10$
- ☐ A. $x \leq 8$ ☐ C. $x \leq 2$
☐ B. $x \geq 8$ ☐ D. $x \geq 2$

11)



A cylinder has radius 6 in and volume 1695.6 in^3 . What is its height? (Use $\pi \approx 3.14$.)

- ☐ A. 7.5 in ☐ C. 10 in
☐ B. 15 in ☐ D. 20 in



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1) Factor $x^2 + 3x - 10$.

☐ A. $(x + 5)(x - 2)$

☐ C. $(x + 10)(x - 1)$

☐ B. $(x - 5)(x + 2)$

☐ D. $(x - 10)(x - 1)$

2) A data set has a linear relationship modeled by the line $y = 0.5x + 10$. Which point lies exactly on the trend line?

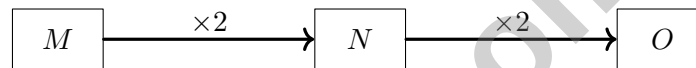
☐ A. $(2, 10)$

☐ C. $(6, 12)$

☐ B. $(8, 15)$

☐ D. $(4, 12)$

3) If Figure M is similar to Figure N with scale factor 2, and Figure N is similar to Figure O with scale factor 2, what is the scale factor from Figure M to Figure O ?



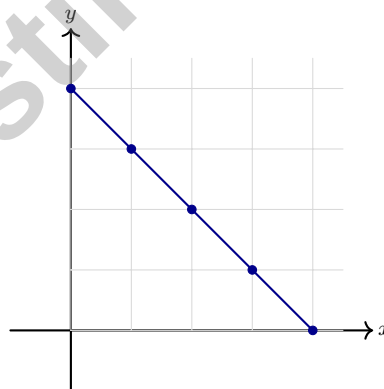
☐ A. 2

☐ C. $\frac{1}{2}$

☐ B. 4

☐ D. 1

4) The graph shows function $r(x)$. What is $r(0)$?



☐ A. 0

☐ C. 4

☐ B. 2

☐ D. 1



5) If you divide an irrational number by a nonzero rational number, the result is:

- ☐ A. Always rational ☐ C. Always a whole number
☐ B. Could be either ☐ D. Always irrational

6) Which two perfect squares have $\sqrt{40}$ between them?

- ☐ A. 25 and 36 ☐ C. 49 and 64
☐ B. 64 and 81 ☐ D. 36 and 49

7) A piggy bank has nickels and dimes totaling \$2.75. There are twice as many dimes as nickels. How many nickels are in the bank?

8) What power of 10 completes the conversion $304,000,000 = 3.04 \times ?$

- ☐ A. 10^7 ☐ C. 10^9
☐ B. 10^6 ☐ D. 10^8

9) Complete the conversion: $0.\overline{5}$ equals...

- ☐ A. $\frac{1}{2}$ ☐ C. $\frac{5}{10}$
☐ B. $\frac{1}{5}$ ☐ D. $\frac{5}{9}$



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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 D is correct.** **(8.NS.A.2)** Using $\pi \approx 3.14$ and $\sqrt{10} \approx 3.16$ (since $3.16^2 \approx 9.99$), the sum is approximately 6.30.
- 2) **Choice C is correct.** **(8.G.C.9)** Use $SA = 2(lw + lh + wh)$. Then $250 = 2(10 \times 5 + 10h + 5h) = 100 + 30h$, so $150 = 30h$ and $h = 5$ ft.
- 3) **Choice D is correct.** **(8.G.A.1)** Translations, reflections, and rotations (and their compositions) are rigid transformations that preserve both distance and angle. Dilations multiply all distances by a scale factor, changing size.
- 4) **Choice D is correct.** **(8.EE.B.6)** Check $(2, 8)$: $\frac{3}{2}(2) + 5 = 8$, so the point lies on the line. The slope is $\frac{3}{2}$ and the y -intercept is 5; a perpendicular line would have slope $-\frac{2}{3}$, not $\frac{2}{3}$.
- 5) **Choice A is correct.** **(8.EE.C.7)** Subtract $5x$ and 2: $x = 7$.
- 6) **Choice D is correct.** **(8.EE.C.8b)** Dividing by -5 requires flipping $<$ to $>$. The correct step is $x - 1 > -2$, so the correct solution is $x > -1$, not $x < -1$.
- 7) **Choice B is correct.** **(8.G.C.9)** $V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times 3.14 \times 81 \times 14 = \frac{1}{3} \times 3560.76 = 1186.92 \text{ cm}^3$.
- 8) **Choice A is correct.** **(8.SP.A.3)** Residual = actual - predicted = $7 - 7 = 0$. The model predicts perfectly for this point.
- 9) **The correct answer is -2 .** **(8.EE.A.3)** With the same coefficient, the smallest power has the smallest exponent: -2 .
- 10) **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 $\frac{4a^4}{b^5}$.
- 11) **The correct answer is $\frac{37}{300}$.** **(8.NS.A.1)** Set $x = 0.12\bar{3} = 0.12333\dots$. Then $100x = 12.\bar{3}$ and $1000x = 123.\bar{3}$. Subtracting: $900x = 111$, so $x = \frac{111}{900} = \frac{37}{300}$.
- 12) **Choice D is correct.** **(8.EE.A.2)** $4 \times 4 \times 4 = 64$, so $\sqrt[3]{64} = 4$.
- 13) **Choice C is correct.** **(8.EE.A.4)** Divide: $\frac{2 \times 10^{12}}{4 \times 10^{12}} = \frac{2}{4} \times 10^0 = 0.5 \times 10^0 = 0.5$ kilotons.
- 14) **The correct answer is $\sqrt{10}$.** **(8.NS.A.2)** Since square root is an increasing function, compare the radicands: $10 < 19 < 35$. Therefore $\sqrt{10} < \sqrt{19} < \sqrt{35}$.
- 15) **Choice C is correct.** **(8.EE.B.5)** Slope $k = \frac{7}{3}$. Equation: $y = \frac{7}{3}x$. At $x = 6$: $y = \frac{7}{3}(6) = 14$.
- 16) **Choice A is correct.** **(8.EE.C.8a)** Add the equations: $(5x + 2y) + (3x - 2y) = 16 + 0$, so $8x = 16$, giving $x = 2$. Substitute: $5(2) + 2y = 16$, so $10 + 2y = 16$ and $y = 3$. Solution: $(2, 3)$.
- 17) **Choice B is correct.** **(8.EE.C.8b)** Shading ABOVE the line requires $\geq$ or $>$. A solid line is shown, so $\geq$ is correct.
- 18) **Choice B is correct.** **(8.F.A.1)** Input 3 already maps to 6. Adding $(3, 8)$ would make input 3 map to two different outputs (6 and 8), violating the function definition.
- 19) **Choice B is correct.** **(8.F.A.2)** From verbal description, f has y -intercept 5. From table g , the y -intercept is 10. Since $10 > 5$, g is greater.
- 20) **Choice B is correct.** **(8.F.A.3)** The differences between consecutive y -values are $1 - 0 = 1$, $4 - 1 = 3$, $9 - 4 = 5$, which are not constant, indicating a nonlinear (quadratic) function.
- 21) **The correct answer is A,C.** **(8.NS.A.1)** Statement A is true because rational numbers are closed under addition. Statement C is true because any terminating decimal, such as $0.75 = \frac{3}{4}$, is rational. Statement B is false because two irrational numbers can multiply to a rational number, for example $\sqrt{2} \times \sqrt{8} = 4$. Statement D is false because integers are rational. Statement E is false because perfect squares have rational square roots, not irrational ones.
- 22) **Choice B is correct.** **(8.F.B.4)** Slope is $\frac{11-7}{2-1} = 4$. When $x = 3$: $y = 11 + 4 = 15$.
- 23) **Choice B is correct.** **(8.G.A.2)** Equal perimeters do NOT guarantee congruence. Rectangle 1 is 18×12 cm, while Rectangle 2 is 20×10 cm. Congruence requires equal corresponding sides, not just equal perimeters.
- 24) **Choice B is correct.** **(8.G.A.3)** When dilated by scale factor k , area is multiplied by k^2 . Here: $10 \times 3^2 = 10 \times 9 = 90$.
- 25) **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.



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Hi, Grade 8 Math Star!

◇ You finished this practice set with real effort. Grade 8 math asks you to connect ideas, explain your thinking, and stay steady through multi-step problems. ◇

★ **Remember this:** Every page you completed helped build stronger habits: reading carefully, choosing a method, showing work, and checking whether the answer makes sense. You practiced across 3 full Grade 8 practice tests, and that repeated effort matters. ★

What You Built

- **Focus:** You stayed with challenging questions.
- **Accuracy:** You learned to slow down when details matter.
- **Reasoning:** You practiced explaining why a method works.
- **Readiness:** You are more prepared than when you started.

Grade 8 test-day tip: Before test day, review the questions that made you pause. Those are the best teachers.

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

Jay Daie

Your Grade 8 Math Friend

PRACTICE TODAY, ACHIEVE TOMORROW!

GRADE
8

Give your child the edge they need with **3 full-length** Grade 8 Math practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, boosting confidence, and preparing for 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!

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

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PRACTICE. PREPARE. SUCCEED.



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More Practice. More Confidence.
Better **Results**.