

Hawaii

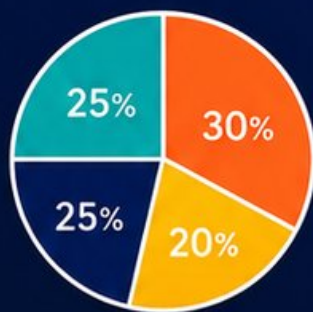
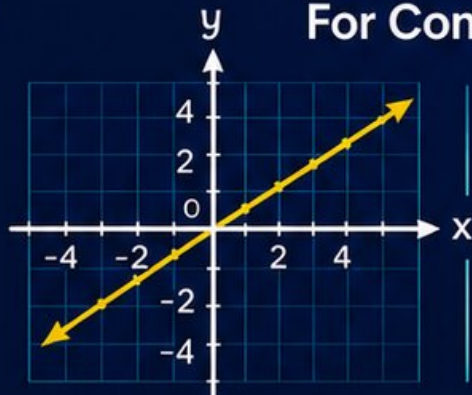
Smarter Balanced

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

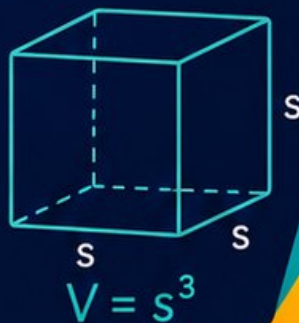


$$y = mx + b$$

$$2x - 3y = 6$$

$$\sqrt{x^2 + y^2}$$

$$A = bh$$



4 PRINTED TESTS



2 ONLINE TESTS

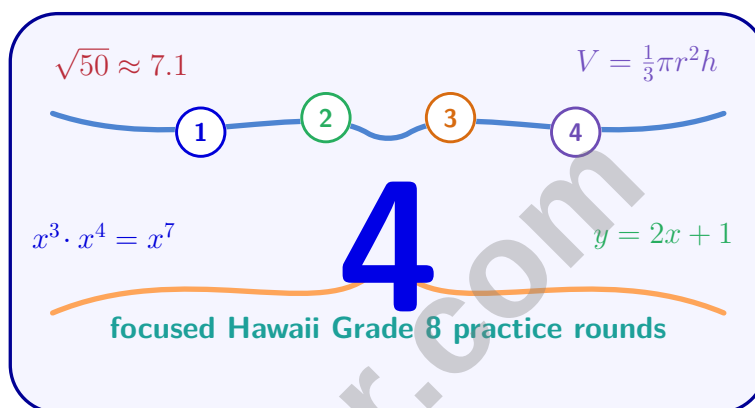


Use these **two additional online practice tests** for extra review after the printed tests in this book.



4 Hawaii Smarter Balanced Grade 8 Math Practice Tests

Purposeful Smarter Balanced Prep with Review, Answer Keys, and Explanations



Four 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!

Four focused rounds for sharper Smarter Balanced math thinking

This book gives you four 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 four-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?

Four Smarter Balanced tests, 160 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–4	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

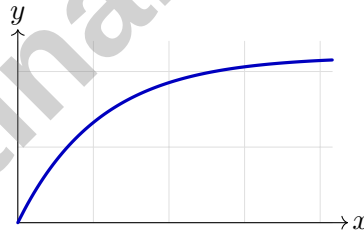
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- 1) A household budget for monthly net income of \$4,000 is divided as follows: Housing 35%, Food 20%, Transportation 15%, Utilities 10%, Savings 10%, Other 10%. How much is allocated to housing?



Monthly net income: \$4,000

- ☐ A. \$400 ☐ C. \$1,400
☐ B. \$800 ☐ D. \$2,000
- 2) A triangle has sides such that one side is 2 cm longer than the shortest side, and the longest side is 4 cm longer than the shortest. If the perimeter is 18 cm, what is the shortest side?
- ☐ A. 4 cm ☐ C. 6 cm
☐ B. 5 cm ☐ D. 7 cm
- 3) Which scenario matches a graph that rises steeply at first, then gradually?



- ☐ A. A balloon inflating at a constant rate ☐ C. A car accelerating then cruising at constant speed
☐ B. Compound interest earning accelerating returns ☐ D. Learning a new skill (fast gains, then slower progress)



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4) A school's two-way table tracks 420 students:

	Honors	Regular	Total
9th Grade	63	147	210
10th Grade	84	126	210
Total	147	273	420

What percentage of all students are 9th-graders in honors classes?

☐ A. $\approx 15\%$

☐ C. $\approx 30\%$

☐ B. $\approx 25\%$

☐ D. $\approx 35\%$

5) If two groups of students both have mean score 80 but Group 1 MAD = 2 and Group 2 MAD = 10, which is true?

☐ A. Group 2 has higher overall achievement

☐ C. Group 1 scores are more uniform

☐ B. Group 1 has more students

☐ D. Both groups have identical scores

6) A teacher plots the relationship between attendance and test scores. The trend line shows a positive slope. What does this tell you?

☐ A. Attendance directly causes higher test scores

☐ C. Test scores determine how often students attend

☐ B. All students with perfect attendance pass the test

☐ D. As attendance increases, test scores tend to increase on average

7) Points $(-1, 5)$ and $(2, 14)$ lie on a line. Find the slope.



8) Rectangle $PQRS$ has length 10 m and width 6 m. Rectangle $TUVW$ has length 5 m and width 3 m. What is the scale factor from $PQRS$ to $TUVW$?

☐ A. 2

☐ C. 3

☐ B. $\frac{1}{2}$

☐ D. $\frac{1}{3}$

9) Which expression equals a rational number?

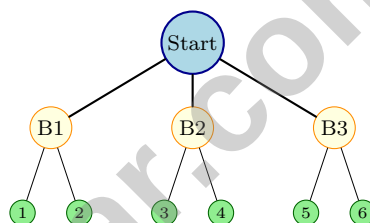
☐ A. $\sqrt{2} \times \sqrt{3}$

☐ C. $\sqrt{3} + \sqrt{3}$

☐ B. $\sqrt{4} + \sqrt{5}$

☐ D. $\sqrt{9} \times \sqrt{4}$

10) A tree diagram shows that a choice has 3 branches first, then each branch splits into 2 more branches. How many final outcomes are there?



☐ A. $3 + 2 = 5$

☐ C. $3^2 = 9$

☐ B. $3 \times 2 = 6$

☐ D. $2^3 = 8$

Cube values: $3^3 = 27$, $4^3 = 64$



11)

Between which two consecutive integers does $\sqrt[3]{30}$ lie?

☐ A. 1 and 2

☐ C. 3 and 4

☐ B. 2 and 3

☐ D. 4 and 5



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$$0.\overline{789}$$

Non-repeating digits: 1

Repeating-block digits: 2

Denominator form: $\frac{?}{990}$

1)

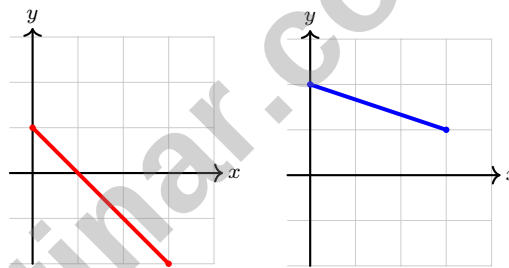
What goes in the numerator when converting $0.\overline{789}$?

☐ A. $7 + 89 = 96$

☐ C. 89

☐ B. 789

☐ D. $789 - 7 = 782$

2) Which graph best represents a line with slope $-\frac{1}{3}$?☐ A. Red line (left)☐ C. Both have slope $-\frac{1}{3}$ ☐ B. Neither has slope $-\frac{1}{3}$ ☐ D. Blue line (right)

3) Maria is currently 4 years older than her sister Emma. In 3 years, Maria will be twice Emma's age. How old is Emma now?

☐ A. 1

☐ C. 3

☐ B. 2

☐ D. 5



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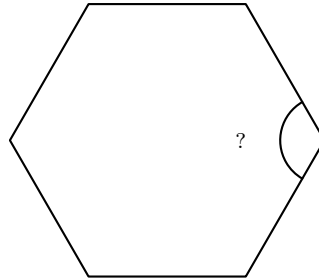
4) If $f(x) = x - 3$ and $f(x) = 5$, what is x ?

☐ A. 2

☐ C. 5

☐ B. 8

☐ D. 15



5)

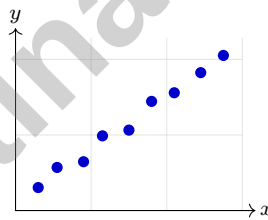
A regular hexagon is shown with one interior angle marked. What is the measure of the marked interior angle?

☐ A. 100°

☐ C. 120°

☐ B. 110°

☐ D. 130°



6)

A scatter plot shows monthly rainfall (inches) versus crop yield (tons per acre) for a farm over 10 years. The points show a clear upward trend with moderate scatter around the line of best fit. Which statement is most accurate?

☐ A. Moderate positive correlation exists between rainfall and crop yield

☐ C. Rainfall and crop yield are unrelated

☐ B. Rainfall is the only factor affecting crop yield

☐ D. Decreased rainfall increases crop yield



1) A two-way table of 480 products tracks quality and price point:

	Premium	Standard	Total
High Quality	240	80	320
Low Quality	48	112	160
Total	288	192	480

What joint relative frequency represents high-quality premium products?

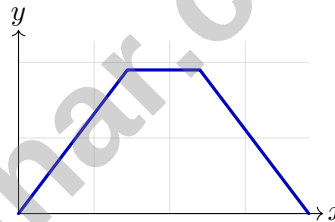
☐ A. $\frac{240}{320} = 0.75$

☐ B. $\frac{240}{288} \approx 0.83$

☐ C. $\frac{240}{480} = 0.50$

☐ D. $\frac{320}{480} \approx 0.67$

2) A graph shows: 0 to 3 hours rising, 3 to 5 hours flat, 5 to 8 hours falling. The function starts at 0 and ends at 0. What is the relationship between the upward and downward slopes (in absolute value)?

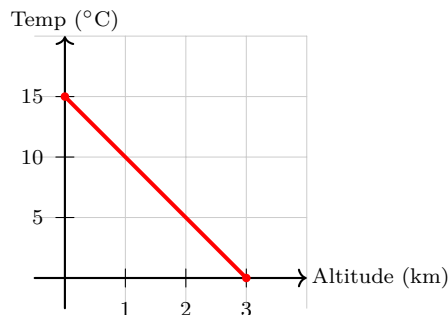


- ☐ A. Upward slope must equal downward slope
- ☐ B. Downward slope is steeper (larger absolute value)
- ☐ C. Cannot determine without knowing the peak value
- ☐ D. Upward slope is steeper



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- 3) A graph shows temperature (in $^{\circ}\text{C}$) versus altitude (in km). The line passes through $(0, 15)$ and $(3, 0)$.



What is the slope?

- ☐ A. -5°C per km
- ☐ B. 5°C per km
- ☐ C. $-\frac{1}{5}^{\circ}\text{C}$ per km
- ☐ D. 3°C per km
- 4) A car traveling at 60 mph leaves 1 hour before a car traveling at 75 mph. How long does the faster car take to catch the slower car?
- ☐ A. 2 hours
- ☐ B. 3 hours
- ☐ C. 4 hours
- ☐ D. 5 hours
- 5) A bus travels according to $d(t) = 55t$, where d is distance in miles and t is time in hours. How far has the bus traveled after 3 hours?
- ☐ A. 55 miles
- ☐ B. 110 miles
- ☐ C. 165 miles
- ☐ D. 185 miles



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.G.B.7) Housing allocation = 35% of \$4,000 = $0.35 \times 4000 = \$1,400$.
- 2) **Choice A is correct.** (8.EE.C.8c) Let s = shortest side. Then the three sides are s , $s + 2$, and $s + 4$. Perimeter: $s + (s + 2) + (s + 4) = 18$, so $3s + 6 = 18$, giving $s = 4$ cm.
- 3) **Choice D is correct.** (8.F.B.5) Option D shows increasing returns that diminish: steep early growth then gradual improvement. A is constant, B accelerates, C has a flat section.
- 4) **Choice A is correct.** (8.SP.A.4) Joint relative frequency: $\frac{63}{420} = 0.15 = 15\%$.
- 5) **Choice C is correct.** (8.G.B.8) Group 1's smaller MAD (2) shows less spread and more consistent performance. Group 2's larger MAD (10) indicates greater variability in scores.
- 6) **Choice D is correct.** (8.SP.A.2) A positive slope indicates a positive association: as x increases, y tends to increase. This is correlation, not necessarily causation.
- 7) **The correct answer is 3.** (8.EE.B.5) Slope = $\frac{14 - 5}{2 - (-1)} = \frac{9}{3} = 3$.
- 8) **Choice B is correct.** (8.G.A.4) Scale factor is the ratio of a side in $TUVW$ to the corresponding side in $PQRS$: $\frac{5}{10} = \frac{1}{2}$.
- 9) **Choice D is correct.** (8.NS.A.1) $\sqrt{9} \times \sqrt{4} = 3 \times 2 = 6$, which is rational. The other expressions yield irrationals: $\sqrt{3} + \sqrt{3} = 2\sqrt{3}$, $\sqrt{4} + \sqrt{5} = 2 + \sqrt{5}$, and $\sqrt{2} \times \sqrt{3} = \sqrt{6}$.
- 10) **Choice B is correct.** (8.EE.C.7b) Each of the 3 initial branches splits into 2 outcomes: $3 \times 2 = 6$ final outcomes.
- 11) **Choice C is correct.** (8.NS.A.2) $3^3 = 27$ and $4^3 = 64$. Since $27 < 30 < 64$, we have $3 < \sqrt[3]{30} < 4$.
- 12) **Choice D is correct.** (8.EE.A.3) Move the decimal 4 places left to get 4.2; the exponent is positive 4. Thus $42,000 = 4.2 \times 10^4$.
- 13) **The correct answer is 80.** (8.G.A.5) The sum of interior angles in a quadrilateral is 360° . Fourth angle = $360 - 75 - 95 - 110 = 80^\circ$.
- 14) **Choice D is correct.** (8.NS.A.1) Let $x = 0.\overline{111}$. Then $1000x = 111.\overline{111}$. Subtracting: $999x = 111$, so $x = \frac{111}{999} = \frac{1}{9}$.
- 15) **Choice B is correct.** (8.G.C.9) Let side length = s . Then $SA = 2(s^2 + s \cdot s + s \cdot s) = 2(s^2 + 2s^2) = 2(3s^2) = 6s^2 = 150$. So $s^2 = 25$, giving $s = 5$ cm.
- 16) **Choice C is correct.** (8.G.A.1) A 180° rotation maps each point (x, y) to $(-x, -y)$, producing N. A reflection across the x -axis maps (x, y) to $(x, -y)$, producing O.
- 17) **Choice C is correct.** (8.EE.B.6) Both points have the same x -coordinate, making this a vertical line. Vertical lines have undefined slope.
- 18) **Choice A is correct.** (8.EE.C.7) Subtract 9: $-x = -5$. Multiply by -1 : $x = 5$. Check: $9 - 5 = 4$ ✓. (Distractor B: sign error; C: adding instead of subtracting.)
- 19) **Choice C is correct.** (8.EE.C.8b) Set up: $12h + 50 \geq 170$. Subtract 50: $12h \geq 120$. Divide by 12: $h \geq 10$ hours.
- 20) **Choice C is correct.** (8.G.C.9) $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 512 = 2143.57 \text{ in}^3$.
- 21) **The correct answer is A,B.** (8.F.A.1) Verify each value: $f(1) = 3$ and $f(3) = 7$, so A and B are correct. Also, $f(2) = 5$, $f(0) = 1$, and $f(4) = 9$, so C, D, and E are false.
- 22) **Choice B is correct.** (8.SP.A.3) Negative slope means as one variable increases, the other decreases. More training leads to fewer errors.
- 23) **Choice D is correct.** (8.NS.A.2) $\frac{\pi}{2} \approx \frac{3.14}{2} = 1.57$.
- 24) **Choice C is correct.** (8.EE.A.1) Using the product rule, the missing exponent plus 4 must equal 9. So the missing exponent is $9 - 4 = 5$.
- 25) **Choice D is correct.** (8.EE.A.2) $6 \times 6 \times 6 = 216$, so $\sqrt[3]{216} = 6$.
- 26) **Choice C is correct.** (8.EE.A.4) Multiply coefficients: $4.5 \times 2 = 9$. Add exponents: $10^{-6+(-4)} = 10^{-10}$. Result: 9×10^{-10} .
- 27) **Choice C is correct.** (8.EE.B.5) If $y = 3x$ (cups per batch), then $12 = 3x$, so $x = 4$. Four batches require 12 cups.



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You Are Building Test Stamina

Hi, Stamina Builder!

◇ This carefully paced book gave you four steady Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Completing practice tests builds more than math knowledge. It builds the focus needed to think clearly for a long stretch. ◇

★ **Remember this:** That stamina matters. On real test day, calm pacing can be just as important as remembering a formula. ★

Stamina Skills

- **Breathe:** Reset before a difficult page.
- **Pace:** Do not spend too long in one place.
- **Return:** Come back to skipped questions with fresh eyes.
- **Finish Strong:** Use the last minutes to check.

Grade 8 test-day tip: Practice a simple reset: pause, breathe, reread, then choose your next step.

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

Jay Daie

Your Test-Stamina Coach

PRACTICE TODAY, ACHIEVE TOMORROW!

Give your child the confidence and skills they need with **4 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!

4



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
- ✓ 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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2 ONLINE TESTS



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