

9

Hawaii

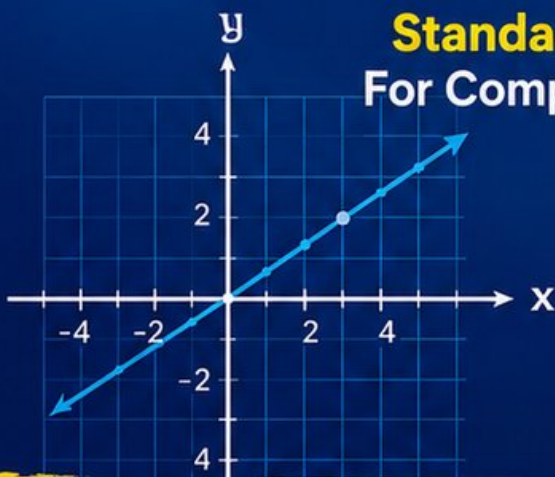
Smarter Balanced

Grade 8

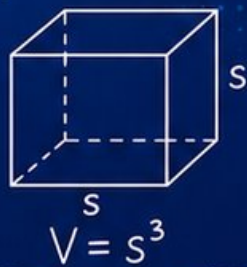
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



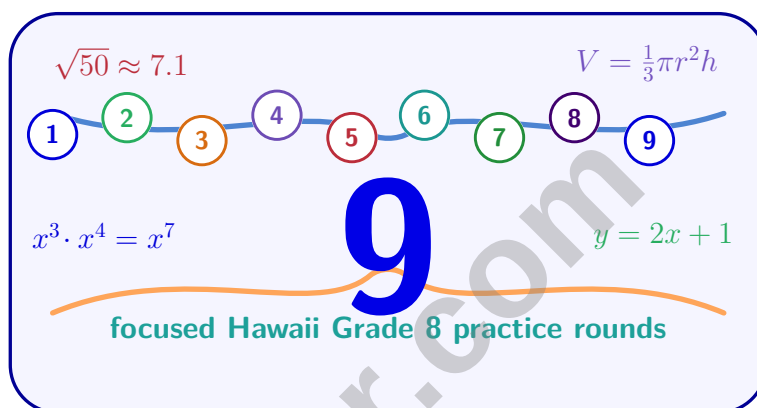
$$2x + 3y = 12$$
$$y = mx + b$$

**9** PRINTED
TESTS**2** ONLINE
TESTS

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

9 Hawaii Smarter Balanced Grade 8 Math Practice Tests

Complete Hawaii Practice for Functions, Systems, Geometry, Data, and Probability



Nine 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!

Nine focused rounds for sharper Smarter Balanced math thinking

This book gives you nine 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 nine-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?

Nine Smarter Balanced tests, 360 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 7–9	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) A line has a slope of $-\frac{1}{2}$ and passes through $(4, 6)$. What is the y -coordinate when $x = 8$?

☐ A. 4☐ C. 6☐ B. 8☐ D. 2

- 2) Write 4.7×10^{-4} in decimal (standard) form.

- 3) A line segment has endpoints at $(1, 2)$ and $(5, 6)$. After a translation, the endpoints become $(3, 5)$ and $(7, 9)$. What is the translation vector?

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

- 4) A taxi charges a base fare of \$3 plus \$2 per mile. The equation $y = 2x + 3$ represents the total fare y for x miles. What does the slope 2 represent?

☐ A. The base fare☐ C. The total number of miles☐ B. The minimum fare☐ D. The charge per mile

- 5) Solve for n : $-2(n - 4) = 10$

☐ A. $n = 1$ ☐ C. $n = 9$ ☐ B. $n = -9$ ☐ D. $n = -1$ 

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6) Explain: Why must the inequality symbol be flipped when solving $-3x \leq 12$?

- ☐ A. Multiplying by a negative reverses the direction of the inequality
☐ B. It is a rule you must always follow, regardless of the sign
☐ C. Dividing by any negative number requires flipping
☐ D. Flipping prevents getting a negative variable

7) Complete the table by applying exponent laws:

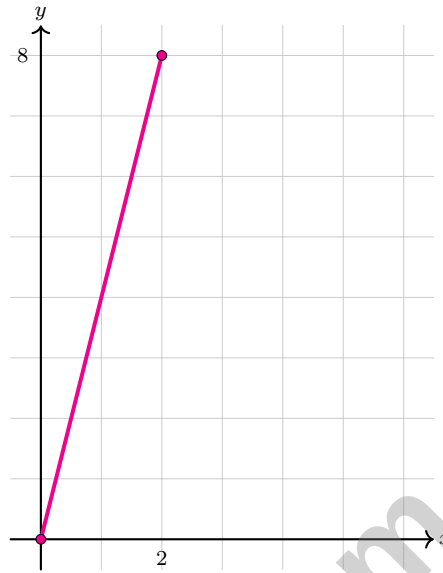
Start	Law	Result
$3^5 \cdot 3^2$	Add exponents	$3^?$

What is the exponent in the result?

- ☐ A. 3
☐ B. 10
☐ C. 15
☐ D. 7
- 8) A bacteria culture doubles every hour. Starting with 5×10^3 bacteria, after 3 hours the population is $5 \times 10^3 \times 2^3$. Express this in scientific notation.

- ☐ A. 4×10^3
☐ B. 10×10^4
☐ C. 4×10^4
☐ D. 1.6×10^5





9)

Which equation represents this line?

☐ A. $y = 2x$

☐ C. $y = 6x$

☐ B. $y = 8x$

☐ D. $y = 4x$

10) The system $\begin{cases} 2x - y = 5 \\ 4x - 2y = 10 \end{cases}$ has how many solutions?

☐ A. No solution☐ C. Exactly two solutions☐ B. Exactly one solution☐ D. Infinitely many solutions

11) A student graphs $x \leq -1$ but draws a DASHED line instead of solid. What is the consequence?

☐ A. The boundary point $x = -1$ is excluded from the solution

☐ C. The shading direction is flipped

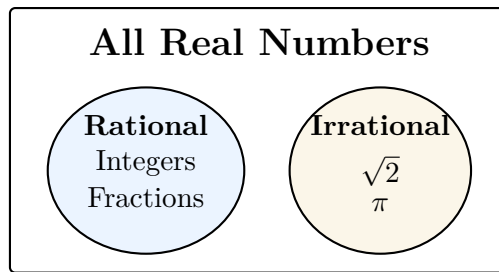
☐ B. The boundary point $x = -1$ is still included

☐ D. The inequality changes to $x > -1$



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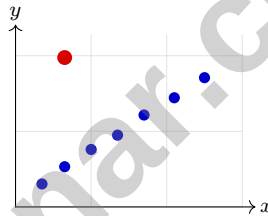
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& answers



1)

Which statement is true?

- | | |
|--|--|
| ☐ A. All square roots are irrational
☐ B. All integers are rational
☐ C. Some repeating decimals are irrational | ☐ D. Every irrational number can be written as a fraction |
|--|--|

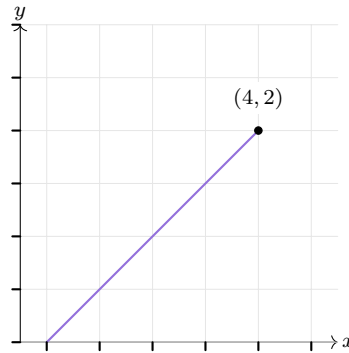


2)

A scatter plot shows gas mileage (mpg) versus vehicle weight (pounds). The plot contains one point at (2500 lbs, 45 mpg) while all other points fall between (3000 lbs, 18 mpg) and (4500 lbs, 22 mpg). Which point is an outlier?

- | | |
|--|--|
| ☐ A. The point at (3000, 18)
☐ B. The point at (2500, 45) | ☐ C. The point at (4500, 22)
☐ D. All points are equally spaced |
|--|--|





3)

Using the linear model $y = 2.5x - 8$, find the predicted value of y when $x = 4$.

☐ A. 10☐ C. 4☐ B. 3☐ D. 2

4) A decorative shape consists of a cube with side 5 cm topped with a square pyramid (same base, height 5 cm). Which choice is closest to the total volume?

☐ A. 125 cm^3 ☐ C. 208 cm^3 ☐ B. 166 cm^3 ☐ D. 250 cm^3

5) The height of a ball (in meters) t seconds after being thrown is $h(t) = 20t - 5t^2$. Find $h(2)$.



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1) An angle is three times the measure of its complement. Find the measure of the smaller angle.

☐ A. 22.5°

☐ B. 30°

☐ C. 45°

☐ D. 60°

2) A cylinder has radius 2 inches and height 6 inches. Express its surface area in terms of π .

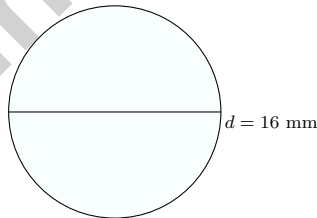
☐ A. $8\pi + 12\pi \text{ in}^2$

☐ B. $8\pi + 24\pi \text{ in}^2$

☐ C. $16\pi + 24\pi \text{ in}^2$

☐ D. $16\pi + 48\pi \text{ in}^2$

3) If 5 kilograms of rice cost \$15, what is the unit price (constant of proportionality) in dollars per kilogram?



4)

A sphere has a diameter of 16 mm. What is its approximate volume? (Use $\pi \approx 3.14$.)

☐ A. 268.08 mm^3

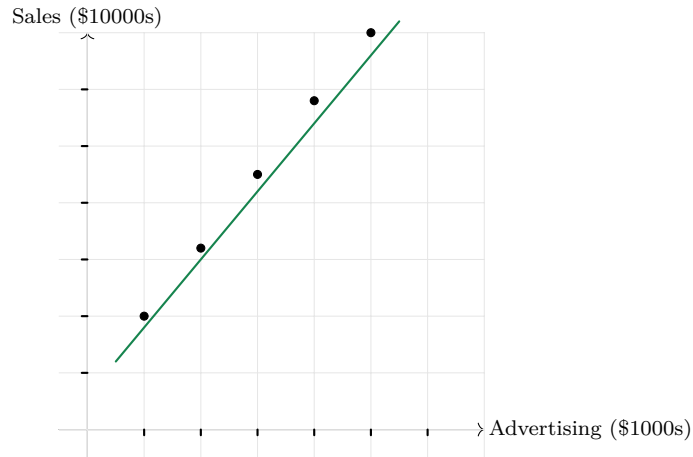
☐ B. 1072.33 mm^3

☐ C. 2143.57 mm^3

☐ D. 4289.33 mm^3



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5)

A business tracks advertising spend vs. sales. The model is $S = 1.1a + 0.8$, where S is sales and a is advertising. What does the 0.8 intercept tell you?

- ☐ A. Sales decrease by \$0.80 per \$1000 ad spend ☐ C. The company spends \$800 on advertising initially
☐ B. Base sales of \$8000 occur with zero ad spend ☐ D. Maximum possible sales are \$8000

6) Which equation is LINEAR?

- ☐ A. $y = 5 - 3x^2$ ☐ C. $y = 7 + 2x$
☐ B. $y = \sqrt{x + 4}$ ☐ D. $y = \frac{10}{x}$

7) The equation $y = 12x + 50$ represents a driver's earnings in dollars, where x is the number of hours worked. What does the slope 12 represent?

- ☐ A. Hourly wage of \$12 ☐ C. Initial debt of \$12
☐ B. Total earnings of \$12 ☐ D. Number of hours worked



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 A is correct.** (8.EE.B.5) Using slope = $\frac{\Delta y}{\Delta x}$: $-\frac{1}{2} = \frac{y-6}{8-4}$. So $-\frac{1}{2} = \frac{y-6}{4}$, giving $y-6 = -2$, thus $y = 4$.
- 2) **The correct answer is 0.00047.** (8.EE.A.3) Move the decimal 4 places to the left: $4.7 \times 10^{-4} = 0.00047$.
- 3) **Choice A is correct.** (8.G.A.1) Find the difference: $(3, 5) - (1, 2) = (2, 3)$. Verify with the second point: $(5, 6) + (2, 3) = (7, 9)$ ✓.
- 4) **Choice D is correct.** (8.EE.B.6) In the context of a linear equation, the slope represents the rate of change. Here, the fare increases by \$2 for each additional mile.
- 5) **Choice D is correct.** (8.EE.C.7) Distribute: $-2n + 8 = 10$. Subtract 8: $-2n = 2$. Divide by -2 : $n = -1$.
- 6) **Choice C is correct.** (8.EE.C.8b) When dividing (or multiplying) both sides of an inequality by a negative number, the inequality symbol must flip to preserve the truth of the statement. For example, if $2 > 1$ (true), multiplying by -1 gives $-2 > -1$ (false), so we flip to get $-2 < -1$ (true).
- 7) **Choice D is correct.** (8.EE.A.1) Product rule: $3^5 \cdot 3^2 = 3^{5+2} = 3^7$.
- 8) **Choice C is correct.** (8.EE.A.4) $5 \times 10^3 \times 8 = (5 \times 8) \times 10^3 = 40 \times 10^3 = 4 \times 10^4$.
- 9) **Choice D is correct.** (8.EE.B.5) Slope $k = \frac{8}{2} = 4$. The equation is $y = 4x$.
- 10) **Choice D is correct.** (8.EE.C.8a) The second equation is exactly 2 times the first: $4x - 2y = 10$ is $2(2x - y = 5)$. They represent the same line, so there are infinitely many solutions.
- 11) **Choice A is correct.** (8.EE.C.8b) A DASHED line means the boundary is NOT included, changing the meaning to $x < -1$. The solid line is essential for including the boundary in $\leq$ or $\geq$ inequalities.
- 12) **Choice C is correct.** (8.F.A.2) A grows at 50/hr. B grows at $(150 - 50)/2 = 50/\text{hr}$. Both equal.
- 13) **The correct answer is 4.41.** (8.NS.A.1) Compute $3 + 1.41 = 4.41$.
- 14) **Choice A is correct.** (8.F.A.3) The y -values are 5, 11, 17, 23. The differences are $11 - 5 = 6$, $17 - 11 = 6$, and $23 - 17 = 6$. Because the difference is constant for equal steps in x , the function is linear.
- 15) **Choice C is correct.** (8.G.A.2) The perimeter of Rectangle 1 is $2(12) + 2(5) = 24 + 10 = 34$ inches. Since Rectangle 2 is congruent, it has the same perimeter: 34 inches.
- 16) **Choice B is correct.** (8.G.A.3) Translation right 4, down 2: $(x, y) \rightarrow (x + 4, y - 2)$. So $M(5, 1) \rightarrow M'(9, -1)$.
- 17) **Choice B is correct.** (8.G.B.6, 8.G.B.7) From $(\sqrt{12})^2 + (\sqrt{13})^2 = c^2$, we get $12 + 13 = 25$, so $c = \sqrt{25} = 5$.
- 18) **Choice D is correct.** (8.G.A.5) Check: 108° (pentagon), 144° (decagon), 162° (20-gon) are all valid. For 130° : solving $\frac{(n-2) \times 180}{n} = 130$ gives $n \approx 12.86$, which is not a whole number.
- 19) **The correct answer is A, E.** (8.G.B.8) A is true because the distance formula applies the Pythagorean Theorem to the horizontal and vertical legs between two points. E is true because reversing the points only changes the signs of the differences, and squaring gives the same result. B and C are false because the formula works with positive or negative differences and coordinates. D is false because distances can be irrational, such as $\sqrt{50}$.
- 20) **Choice C is correct.** (8.NS.A.2) $\pi \approx 3.14159 \dots$, commonly estimated as 3.14 or 3.2 for Grade 8 work. Distractors: A (underestimate), B (rounds down), D (rounds up).
- 21) **Choice D is correct.** (8.G.B.7) Net income = Gross income - Deductions = $\$1,200 - \$240 = \$960$.
- 22) **Choice C is correct.** (8.EE.A.2) Area of a square = $s^2 = 9^2 = 81 \text{ cm}^2$.
- 23) **Choice A is correct.** (8.EE.C.7) $(x - 3)^2 = (x - 3)(x - 3) = x^2 - 3x - 3x + 9 = x^2 - 6x + 9$.
- 24) **Choice A is correct.** (8.F.A.1) The range is the set of all outputs (y -coordinates): $-1, 2, 5, 8$.
- 25) **The correct answer is $\frac{53}{90}$.** (8.NS.A.1) Set $x = 0.5\overline{8} = 0.5888 \dots$. Then $10x = 5.\overline{8}$ and $100x = 58.\overline{8}$. Subtracting: $90x = 53$, so $x = \frac{53}{90}$.
- 26) **Choice B is correct.** (8.F.B.4) Option B: from $x = 1$ to $x = 2$, y increases by 3; from $x = 2$ to $x = 3$, y increases by 5. Not constant slope, so not linear. All others have constant slope.
- 27) **Choice A is correct.** (8.F.B.5) The scenario describes three distinct behaviors: rising speed (increasing), constant speed (flat), and decreasing speed (falling). This is a piecewise linear graph with three segments.



Hi, Confident Learner!

◇ This high-stamina book gave you nine substantial Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Grade 8 math can feel big because it connects real numbers and exponents with linear equations, systems, functions, transformations, geometry, and data.

◇

★ **Remember this:** But big topics become manageable when you practice one skill at a time. That is what you have been doing with every test in this book. ★

Confidence Builders

- **Know the Goal:** Identify what the question asks.
- **Use Vocabulary:** Math words point to math actions.
- **Show Work:** Give yourself something to check.
- **Celebrate Effort:** Practice is proof that you are moving.

Grade 8 test-day tip: When reviewing, do not only mark wrong answers. Write one sentence about what you learned from each one.

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

Jay Daie

Your Confidence Coach

CONFIDENCE TODAY, SUCCESS TOMORROW!

GRADE

8

Help your child excel in math with **9 full-length Grade 8 practice tests** designed to reflect real test formats and cover all key math standards.

With a wide variety of questions and real-world applications, this book builds the skills and confidence students need to achieve their best!



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 | ✓ Statistics & Probability |
| ✓ Expressions & Equations | ✓ Pythagorean Theorem |
| ✓ Ratios & Proportional Relationships | ✓ Volume & Surface Area |
| ✓ Linear Equations | ✓ Transformations |
| ✓ Functions | ✓ Inequalities |
| ✓ Geometry | ✓ Data Analysis & Graphing |
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