

9

Delaware

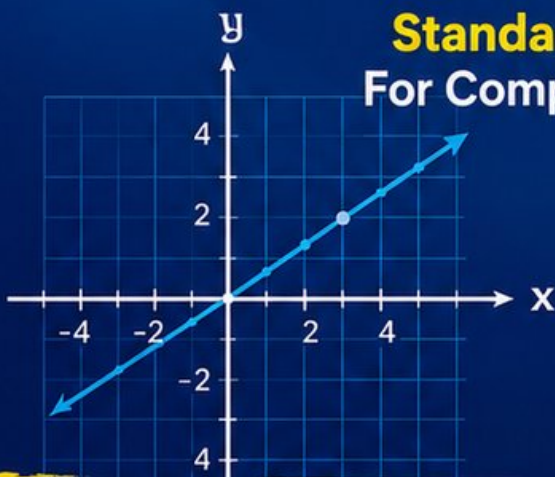
Smarter Balanced

Grade 8

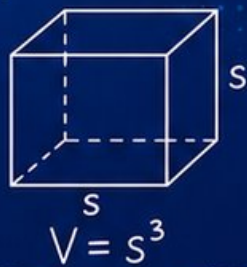
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



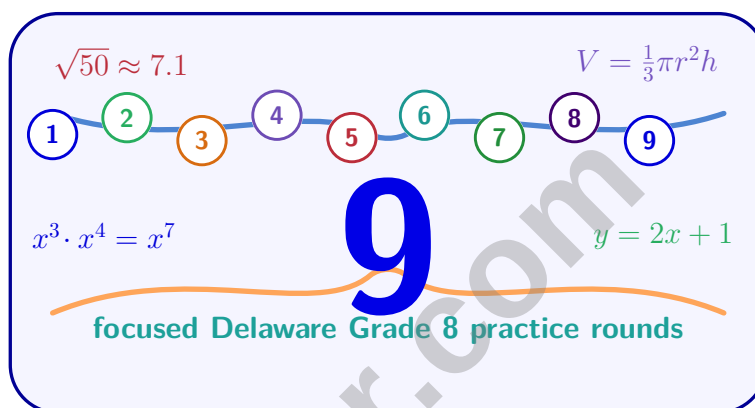
$$2x + 3y = 12$$
$$y = mx + b$$

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

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

9 Delaware Smarter Balanced Grade 8 Math Practice Tests

Clear Delaware Review for Algebra, Geometry, Functions, Statistics, 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, Delaware 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 Delaware 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.

Delaware 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.



Scan me!
For more practice
& answers

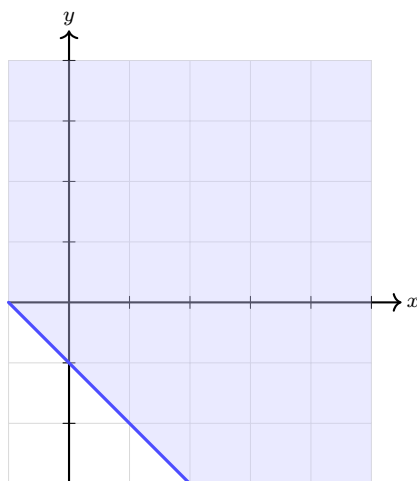
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- 1) A line has slope -2 . Which pair of points could lie on this line?
- ☐ A. $(1, 3)$ and $(2, 5)$ ☐ C. $(1, 1)$ and $(3, 1)$
☐ B. $(0, 4)$ and $(2, 0)$ ☐ D. $(2, 5)$ and $(3, 4)$
- 2) The wavelength of visible light is about 5×10^{-7} m, while the wavelength of a radio wave is about 3×10^3 m. How many times larger is the radio wavelength?
- ☐ A. 1.67×10^9 times ☐ C. 6×10^{-4} times
☐ B. 1.5×10^4 times ☐ D. 6×10^9 times
- 3) Which transformation does **NOT** preserve both distance and angle measure?
- ☐ A. Translation ☐ C. Rotation
☐ B. Reflection ☐ D. Dilation
- 4) Which is the solution to $4(2x - 1) = 3x + 9$?
- ☐ A. $x = 1$ ☐ C. $x = \frac{13}{5}$
☐ B. $x = 3$ ☐ D. $x = -5$



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5)

The line shown has equation $y = -x - 1$. With shading above, the inequality is:

☐ A. $y > -x - 1$

☐ C. $y \geq -x - 1$

☐ B. $y < -x - 1$

☐ D. $y \leq -x - 1$

6) A credit card statement shows a beginning balance of \$500, new purchases of \$300, a payment of \$200, and interest of \$15. What is the ending balance?

☐ A. \$500

☐ C. \$615

☐ B. \$600

☐ D. \$800

7) Which law does this diagram represent?

Same base $\rightarrow$ Add the exponents

$$x^m \cdot x^n = x^{m+n}$$

Example: $2^3 \times 2^4 = 2^{3+4} = 2^7$

Same base required.

Which of the following uses this same law?

☐ A. $(5a)^2 = 25a^2$

☐ C. $2^4 \cdot 2^5 = 2^9$

☐ B. $\frac{p^7}{p^3} = p^4$

☐ D. $(y^3)^4 = y^{12}$



8) Which line passes through the origin and has slope 3?

☐ A. $y = 3x - 3$

☐ C. $y = 3x + 3$

☐ B. $y = -3x$

☐ D. $y = 3x$

9) Solve: $6 - 2x \geq -2$

☐ A. $x \leq 4$

☐ C. $x \leq -4$

☐ B. $x \geq 4$

☐ D. $x \geq -4$

10) Factor $x^2 - 14x + 45$.

$x^2 - 14x + 45$

↓ ↓

Multiply: 45 Add: -14

☐ A. $(x - 5)(x - 9)$

☐ C. $(x - 10)(x - 4)$

☐ B. $(x - 15)(x + 1)$

☐ D. $(x - 45)(x + 1)$

11) The equation $C = 25t + 80$ represents the total cost of a phone plan, where t is the number of months. What does the 80 represent?

☐ A. Monthly cost of \$25

☐ C. Number of months

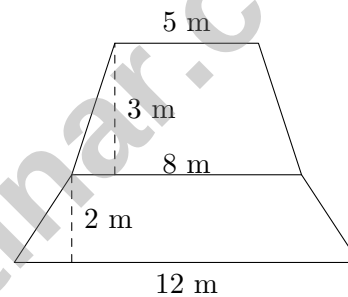
☐ B. Equipment fee of \$80

☐ D. Total cost after 1 month



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- 1) A scale factor of 0.75 applied to a figure means the new figure is:
- ☐ A. Larger than the original ☐ C. 25% of the original size
☐ B. 75% of the original size ☐ D. 75% larger than the original
- 2) 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 $SA = 206 \text{ cm}^2$
- 3) A composite figure is an asymmetric shape made of two trapezoids stacked vertically. Top trapezoid: bases 5 m and 8 m, height 3 m. Bottom trapezoid: bases 8 m and 12 m, height 2 m. What is the combined area?



- ☐ A. 15 m^2 ☐ C. 35 m^2
☐ B. 20 m^2 ☐ D. 39.5 m^2
- 4) Which of the following would most likely show a nonlinear association?
- ☐ A. Study time versus test score ☐ C. Age versus income
☐ B. Temperature versus ice cream sales ☐ D. Dosage versus drug effectiveness



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- 5) In a study of 240 employees, 144 are full-time and 96 are part-time. Among full-time employees, 108 have health insurance. What is the relative frequency of uninsured full-time employees?

☐ A. $\frac{36}{240}$
☐ B. $\frac{36}{144}$

☐ C. $\frac{108}{240}$
☐ D. $\frac{108}{144}$

- 6) Two classes took the same test (mean = 75 for both): Class P: {73, 74, 75, 76, 77} Class Q: {60, 70, 75, 80, 90} Which class should receive more targeted instruction?

☐ A. Class P (more consistent)

☐ C. Both equally

☐ B. Class Q (higher variation in understanding)

☐ D. Neither (both have mean 75)

- 7) A restaurant offers 3 appetizers, 4 main courses, and 2 desserts. How many different meal combinations are possible if you choose one from each category?

☐ A. 24

☐ C. 18

☐ B. 12

☐ D. 9

- 8) A raffle has 20 tickets. If the first ticket drawn wins first prize and the second drawn wins second prize, how many ways can the prizes be awarded?

☐ A. $20 + 19 = 39$

☐ C. $20!$

☐ B. $20 \times 19 = 380$

☐ D. $\binom{20}{2} = 190$

- 9) Which of the following is irrational?

☐ A. $\sqrt{49}$

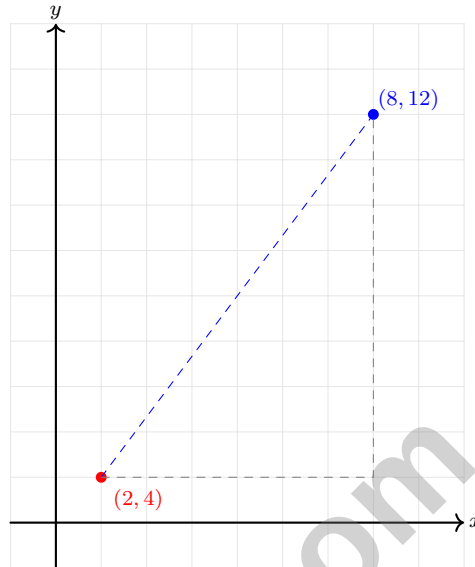
☐ C. $\sqrt{50}$

☐ B. $\frac{7}{8}$

☐ D. 2.5



- 1) Two points on a circle are at $(2, 4)$ and $(8, 12)$. What is the distance between them?

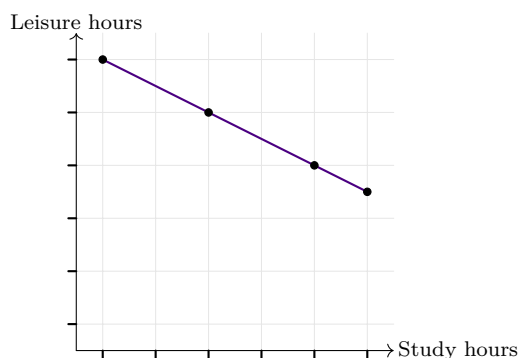


- ☐ A. 6 ☐ C. $\sqrt{90}$
☐ B. 10 ☐ D. 8
- 2) A cylindrical storage tank has a radius of 2.5 m and height of 4 m. What is the total surface area (including top and bottom)? Use $\pi \approx 3.14$.

- ☐ A. 62.8 m^2 ☐ C. 102.05 m^2
☐ B. 82.25 m^2 ☐ D. 128.1 m^2



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& answers



3)

The equation $y = -0.5x + 5$ represents the relationship between study hours and available leisure time. What is the x -intercept (when leisure time equals 0)?

- ☐ A. 5
☐ B. 20

- ☐ C. 10
☐ D. 50

4) Which of these functions is LINEAR?

- ☐ A. $y = 4x^2 - 1$
☐ B. $y = 10x - 6$

- ☐ C. $y = \frac{2}{x+3}$
☐ D. $y = 3^x$



Delaware 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 Delaware 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.EE.B.5) For option B, slope = $\frac{0-4}{2-0} = \frac{-4}{2} = -2$. The other choices have slopes 2, 0, and -1 .
- 2) **Choice D is correct.** (8.EE.A.3) Divide: $\frac{3 \times 10^3}{5 \times 10^{-7}} = \frac{3}{5} \times 10^{3-(-7)} = 0.6 \times 10^{10} = 6 \times 10^9$.
- 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 C is correct.** (8.EE.C.7) Distribute: $8x - 4 = 3x + 9$. Subtract $3x$ from both sides and add 4 to both sides to get $5x = 13$, so $x = \frac{13}{5}$.
- 5) **Choice C is correct.** (8.EE.C.8b) SOLID line (includes boundary) with shading ABOVE means $y \geq -x - 1$.
- 6) **Choice C is correct.** (8.G.B.7) Ending balance = $\$500 + \$300 - \$200 + \$15 = \$615$.
- 7) **Choice C is correct.** (8.EE.A.1) The diagram shows the product rule (add exponents). (C) uses it: $2^{4+5} = 2^9$. (A) is power of product, (B) is quotient rule, (D) is power of power.
- 8) **Choice D is correct.** (8.EE.B.6) A line through the origin has y -intercept 0. With slope 3, the equation is $y = 3x + 0$ or $y = 3x$.
- 9) **Choice A is correct.** (8.EE.C.8b) Subtract 6: $-2x \geq -8$. Divide by -2 (FLIP): $x \leq 4$.
- 10) **Choice A is correct.** (8.EE.C.7) Find two numbers that multiply to 45 and add to -14 : -5 and -9 . Verify: $(-5)(-9) = 45$ and $-5 - 9 = -14$.
- 11) **Choice B is correct.** (8.F.B.4) The constant term 80 is the y -intercept, which is the initial cost when $t = 0$ (before any monthly charges). This one-time equipment fee is paid at the start.
- 12) **Choice C is correct.** (8.F.B.5) The graph shows a flat segment at 100% from hours 0 to 2, indicating no charge change during idle time. From hour 2 onward, the slope is negative (draining). Option D is false because the battery approaches 1.5%, not 0%.
- 13) **Choice B is correct.** (8.G.A.3) Translation right 4, down 2: $(x, y) \rightarrow (x + 4, y - 2)$. So $M(5, 1) \rightarrow M'(9, -1)$.
- 14) **Choice A is correct.** (8.G.A.5) Using $\frac{(n-2) \times 180}{n} = 108$: $(n-2) \times 180 = 108n \Rightarrow 180n - 360 = 108n \Rightarrow 72n = 360 \Rightarrow n = 5$.
- 15) **The correct answer is 300.** (8.G.C.9) Two triangular bases have area 60. The lateral area is $8(5 + 12 + 13) = 240$. Total surface area is $60 + 240 = 300$.
- 16) **Choice D is correct.** (8.EE.A.2) $\sqrt{49} = 7$ and $\sqrt{64} = 8$, so $7 + 8 = 15 \neq \sqrt{113} \approx 10.63$. You cannot add the radicands before taking the root.
- 17) **Choice D is correct.** (8.EE.A.4) Multiply coefficients: $8 \times 9 = 72 = 7.2 \times 10^1$. Add exponents: $10^{4+5} = 10^9$. Combine: $7.2 \times 10^1 \times 10^9 = 7.2 \times 10^{10}$.
- 18) **The correct answer is A, C.** (8.G.B.6, 8.G.B.7) A: $6^2 + 8^2 = 36 + 64 = 100 = 10^2$ ✓. C: $8^2 + 15^2 = 64 + 225 = 289 = 17^2$ ✓. B: $49 + 64 = 113 \neq 81$. D: $100 + 225 = 325 \neq 400$. E: $25 + 49 = 74 \neq 81$.
- 19) **Choice C is correct.** (8.EE.B.5) $y = 12x$. For $x = 3.5$: $y = 12(3.5) = 42$ dollars.
- 20) **Choice A is correct.** (8.EE.C.8a) When two distinct lines do not intersect (parallel lines), they have no points in common, so the system has no solution.
- 21) **Choice A is correct.** (8.F.A.1) Each vertical line at $x = a$ represents all points with that x -coordinate. If the line intersects the graph more than once, the input a has multiple outputs, violating the function definition.
- 22) **The correct answer is 4.41.** (8.NS.A.1) Compute $3 + 1.41 = 4.41$.
- 23) **Choice C is correct.** (8.F.A.2) Slope of F : 1. Slope of G : $(373 - 273)/100 = 1$. Both slopes are 1.
- 24) **Choice C is correct.** (8.F.A.3) Rewrite as $y = -5x + 2$. In the form $y = mx + b$, the slope $m = -5$ and the y -intercept $b = 2$.
- 25) **The correct answer is $\frac{2}{9}$.** (8.NS.A.1) Set $x = 0.\bar{2}$, so $10x = 2.\bar{2}$. Subtracting: $10x - x = 2$, giving $9x = 2$ and $x = \frac{2}{9}$.
- 26) **Choice B is correct.** (8.G.A.2) Perimeter of Triangle 1 = $5 + 5 + 6 = 16$ cm. Even though Triangle 2 is oriented differently (rotated or reflected), congruent figures have equal corresponding sides. Therefore, Triangle 2 also has sides of 5 cm, 5 cm, and 6 cm, giving a perimeter of 16 cm.



A Note for a Careful Thinker

Hi, Careful Thinker!

◇ This high-stamina book gave you nine substantial Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. This book gave you room to practice the kind of thinking eighth graders need: modeling linear relationships, solving systems, connecting algebra and geometry, and interpreting data. ◇

★ **Remember this:** The goal was never just to finish pages. The goal was to become the kind of student who knows how to begin, how to adjust, and how to check. ★

Your Careful-Thinking Toolkit

- **Read Twice:** First for the story, second for the math.
- **Label Values:** Give each number a job.
- **Check Signs:** Negatives and inequalities deserve attention.
- **Use Evidence:** Let the work prove the answer.

Grade 8 test-day tip: On test day, underline the question before solving. It keeps your answer aimed at the right target.

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

Jay Daie

Your Math Practice 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 |
| ✓ Measurement & Data | ✓ 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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More Practice. More Confidence.
Better **Results**.