

Delaware

Smarter Balanced

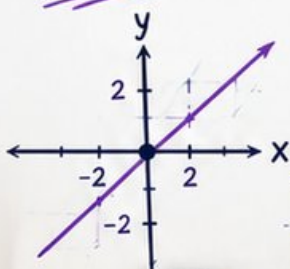
GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

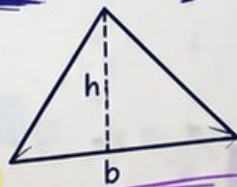
$$y = mx + b$$



**BUILD
CONFIDENCE.
SHARPEN SKILLS.
ACE YOUR
EXAM!**

Practice
Today
Succeed
Tomorrow!

$$A = \frac{1}{2}bh$$



7 PRINTED
TESTS



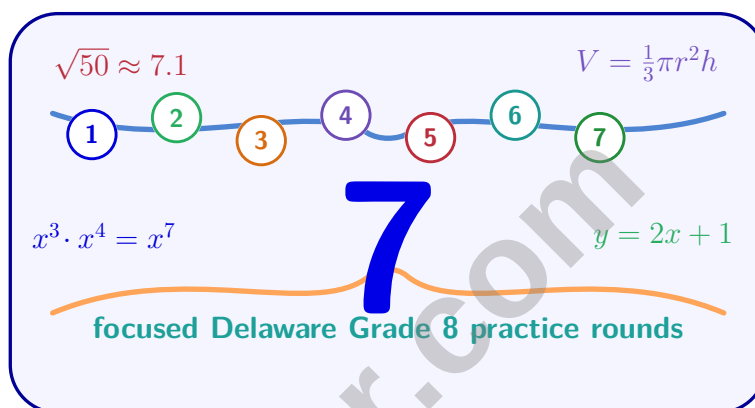
2 ONLINE
TESTS



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

7 Delaware Smarter Balanced Grade 8 Math Practice Tests

Smarter Balanced Practice Built for Grade 8 Functions, Data, and Geometry



Seven 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!

Seven focused rounds for sharper Smarter Balanced math thinking

This book gives you seven 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 seven-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?

Seven Smarter Balanced tests, 280 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.
Test 7	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.



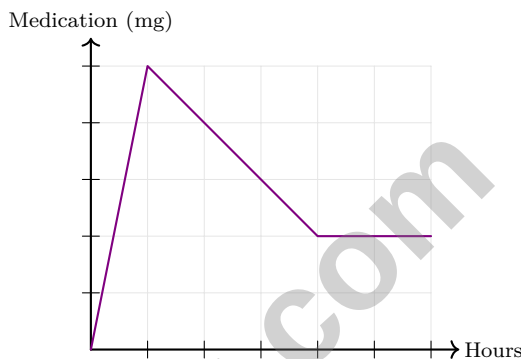
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Table of Contents

★ Practice Test 1	_____	13
★ Practice Test 2	_____	31
★ Practice Test 3	_____	47
★ Practice Test 4	_____	63
★ Practice Test 5	_____	79
★ Practice Test 6	_____	97
★ Practice Test 7	_____	111
Practice Test Answer Keys	_____	128
Practice Test Answers and Explanations	_____	133

1) Four scatter plots are shown with different correlation patterns. Which plot would be most useful for predicting the value of one variable given the other?

- ☐ A. Weak positive correlation with many outliers
- ☐ B. Strong positive correlation with minimal scatter
- ☐ C. No correlation with random scatter
- ☐ D. Perfect nonlinear association



2)

A patient receives a medication injection. The dosage spikes immediately, then decreases as the body metabolizes it, and stabilizes at a baseline. Which interval shows the body absorbing the drug most rapidly?

- ☐ A. From 0 to 1 hour (absorption/rise)
- ☐ B. From 1 to 4 hours (decay)
- ☐ C. From 4 to 6 hours (plateau)
- ☐ D. The rise and decay are equally rapid

3) Solve $3x - 2 \leq 5x + 6$. What is the boundary value?



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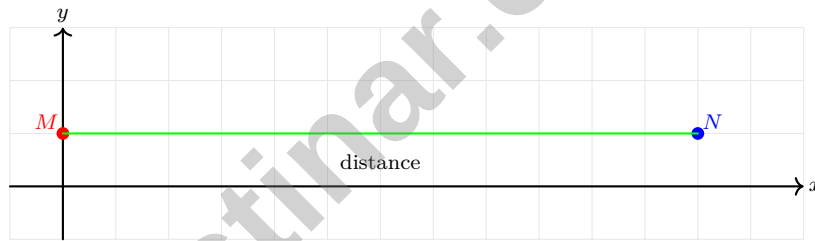
- 4) A scientist says the mass of a virus is 1.5×10^{-20} grams and a bacterium is 5×10^{-15} grams. The bacterium is $\frac{5 \times 10^{-15}}{1.5 \times 10^{-20}} \approx 3.3 \times 10^5$ times more massive. Is this correct?

- ☐ A. No; the quotient should be about 3.3×10^4 .
☐ B. No; the exponent should be 10^{-35} .
☐ C. Yes, the calculation is correct.
☐ D. No; the exponent should be negative.

- 5) Solve by elimination:
$$\begin{cases} 4x + 3y = 18 \\ 2x - 3y = 6 \end{cases}$$

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

- 6) Points $M = (0, 5)$ and $N = (12, 5)$ lie on a coordinate plane. What is the distance MN ?



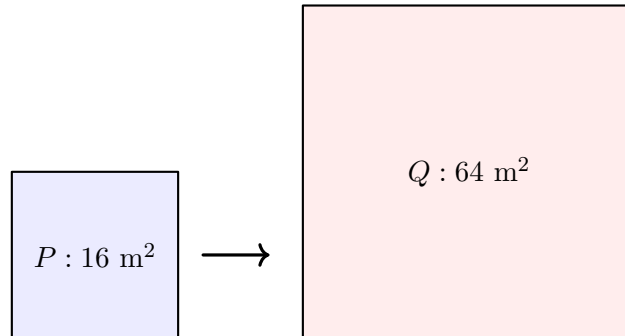
- ☐ A. 5 ☐ C. $\sqrt{140}$
☐ B. 12 ☐ D. 7

- 7) In a regular hexagon, each interior angle measures:

- ☐ A. 144° ☐ C. 90°
☐ B. 120° ☐ D. 108°



- 8) Figure P has area 16 m^2 and Figure Q (similar to P) has area 64 m^2 . What is the scale factor from P to Q ?



- ☐ A. 2
☐ B. 4

- ☐ C. 8
☐ D. 16



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1) Factor $4x^2 - 9$.

☐ A. $(2x - 3)(2x + 3)$

☐ C. $(2x - 3)^2$

☐ B. $(4x - 9)(x + 1)$

☐ D. $(x - 3)(4x + 3)$

2) The points $(-2, -5)$, $(0, -1)$, and $(2, 3)$ lie on the same line. What is the y -intercept?

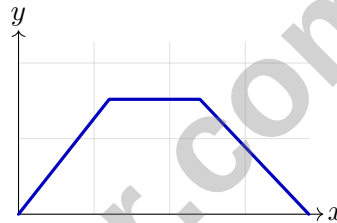
☐ A. -5

☐ C. -1

☐ B. -2

☐ D. 2

3) A graph of a function shows distance from home (in miles) vs. time. The graph rises, then is flat, then falls. Which real-world scenario matches?



☐ A. Drive somewhere, stop, then drive home

☐ C. Stay home, then drive faster

☐ B. Walk faster and faster until stopping

☐ D. Drive home directly from work

4) Which formula correctly calculates the sum of interior angles of a polygon with n sides?

☐ A. $180n$

☐ C. $\frac{n \times 180}{2}$

☐ B. $(n - 2) \times 180$

☐ D. $360n$



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5) $(6.5 \times 10^5) - (3.2 \times 10^5) = ?$

☐ A. 3.3×10^0

☐ C. 3.3×10^5

☐ B. 9.7×10^5

☐ D. 0.33×10^5

6) Solve by elimination:
$$\begin{cases} 2x + 3y = 11 \\ 2x - y = 3 \end{cases}$$

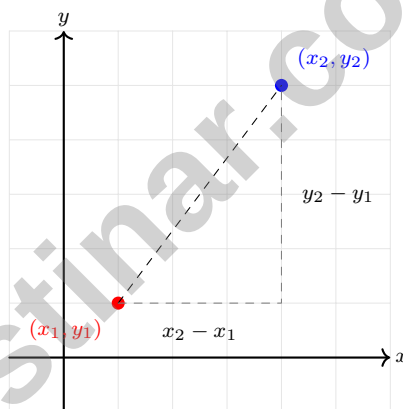
☐ A. $(1, 3)$

☐ C. $(3, 1)$

☐ B. $(2, \frac{7}{3})$

☐ D. $(\frac{5}{2}, 2)$

7) Which of the following represents the distance formula between two points (x_1, y_1) and (x_2, y_2) ?



☐ A. $d = |x_2 - x_1| + |y_2 - y_1|$

☐ C. $d = (x_2 - x_1)^2 + (y_2 - y_1)^2$

☐ B. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

☐ D. $d = x_2 - x_1 + y_2 - y_1$



- 1) A student uses elimination to solve: $3x + 2y = 16$ and $5x - 2y = 24$. They add the equations to get $8x = 40$, so $x = 5$. Then they substitute to find $y = 0.5$. Is this correct?

- ☐ A. No, adding eliminates x , not y . ☐ C. No, the system has no solution.
☐ B. No, the substitution is wrong. ☐ D. Yes, the solution is correct.

- 2) The data set is $\{1, 2, 3, 4, 5, 6\}$. What is the MAD? (Mean = 3.5)

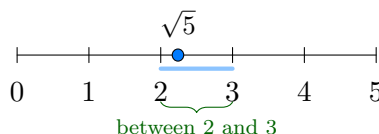
- ☐ A. 1.5 ☐ C. 1.75
☐ B. 2 ☐ D. 2.5

- 3) A box contains 6 pencils: 2 red, 3 blue, and 1 green. If you draw a pencil, replace it, then draw again, what is the probability of drawing blue both times?

- ☐ A. $\frac{9}{36}$ ☐ C. $\frac{3}{18}$
☐ B. $\frac{1}{3}$ ☐ D. $\frac{3}{6}$

- 4) A security code consists of 3 digits, each from 0 to 9, with no repetition allowed. How many different codes are possible?

- ☐ A. $10^3 = 1,000$ ☐ C. $10!$
☐ B. $10 \times 9 \times 8 = 720$ ☐ D. $\binom{10}{3} = 120$



5)

Based on the number line, which statement is true?

- ☐ A. $\sqrt{5}$ is rational ☐ C. $\sqrt{5} = 2.5$
☐ B. $\sqrt{5}$ is between 1 and 2 ☐ D. $\sqrt{5} \approx 2.24$



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- 6) An angle is 12° less than three times its supplement. Write and solve an equation to find the angle's measure.

- 7) Convert $0.\overline{45}$ to a fraction in simplest form.

☐ A. $\frac{9}{20}$
☐ B. $\frac{45}{100}$

☐ C. $\frac{45}{90} = \frac{1}{2}$
☐ D. $\frac{45}{99} = \frac{5}{11}$

- 8) Between which two consecutive integers does $\sqrt[3]{100}$ lie?

☐ A. 2 and 3
☐ B. 5 and 6

☐ C. 3 and 4
☐ D. 4 and 5

- 9) Which number is irrational?

☐ A. $\sqrt{9}$
☐ B. 0.5

☐ C. $\sqrt{4}$
☐ D. $\sqrt{8}$

- 10) Which is the smallest number?

☐ A. 1.5×10^{-2}
☐ B. 1.5×10^0

☐ C. 1.5×10^{-4}
☐ D. 1.5×10^2

- 11) Solve for x : $-3(x - 2) = 9$

☐ A. $x = -1$
☐ B. $x = 5$

☐ C. $x = -5$
☐ D. $x = 1$



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.SP.A.1) A strong linear correlation with tight clustering around the line of best fit allows the most accurate predictions.
- 2) **Choice A is correct.** (8.F.B.5) The graph shows a spike from 0 to 5 mg in 1 hour, then a gradual decrease from 5 to 2 mg over 3 hours. The steepest positive slope is in the first hour.
- 3) **The correct answer is -4 .** (8.EE.C.8b) Solving gives $x \geq -4$, so the boundary value is -4 .
- 4) **Choice C is correct.** (8.EE.A.4) Check: $\frac{5}{1.5} \approx 3.33$ and $10^{-15} - (-20) = 10^5$. So the answer is approximately 3.3×10^5 .
- 5) **Choice C is correct.** (8.EE.C.8a) Add the equations: $(4x + 3y) + (2x - 3y) = 18 + 6$, so $6x = 24$, giving $x = 4$. Substitute: $4(4) + 3y = 18$, so $16 + 3y = 18$, and $y = 2/3$. Solution: $(4, 2/3)$.
- 6) **Choice B is correct.** (8.G.B.8) Since both points have $y = 5$, the horizontal distance is $|12 - 0| = 12$.
- 7) **Choice B is correct.** (8.G.A.5) The sum for a hexagon is $(6 - 2) \times 180 = 720^\circ$. Each angle is $\frac{720}{6} = 120^\circ$.
- 8) **Choice A is correct.** (8.G.A.4) If area ratio is $\frac{64}{16} = 4$, then the linear scale factor is $\sqrt{4} = 2$.
- 9) **Choice A is correct.** (8.F.B.4) Slope: $\frac{48-24}{2-1} = 24$ cupcakes per hour. The line passes through the origin (when $h = 0$, $c = 0$). Equation: $c = 24h$.
- 10) **Choice A is correct.** (8.G.A.3) Points $(1, 1) \rightarrow (-1, 1)$ and $(3, 3) \rightarrow (-3, 3)$. The y -coordinates are unchanged while x -coordinates negate, confirming reflection across the y -axis.
- 11) **Choice C is correct.** (8.EE.C.7) FOIL: $(x + 3)(x - 5) = x^2 - 5x + 3x - 15 = x^2 - 2x - 15$.
- 12) **Choice D is correct.** (8.F.A.2) First line starts at $(0, 1)$ (higher). If slopes are close, first stays above. If second has much steeper slope, it can overtake first in Q1. Answer depends on specific slopes.
- 13) **Choice B is correct.** (8.G.A.2) Congruent regular polygons have equal side lengths. Both octagons have side length 3 inches.
- 14) **Choice B is correct.** (8.G.A.5) The angles sum to 180° : $(n + 15) + (n + 20) + (2n + 25) = 180$. Thus $4n + 60 = 180$, so $4n = 120$ and $n = 30$.
- 15) **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 $c = \sqrt{25} = 5$.
- 16) **Choice C is correct.** (8.G.B.7) Four angles around an intersection point sum to 360° . If one angle is b , the sum of the other three is $360 - b$.
- 17) **Choice B is correct.** (8.G.C.9) For a right triangle, base area is $\frac{1}{2} \times 6 \times 8 = 24 \text{ cm}^2$ (not 48 cm^2). Correct volume: $V = \frac{1}{3} \times 24 \times 10 = 80 \text{ cm}^3$.
- 18) **Choice A is correct.** (8.G.B.7) Large rectangle area = $20 \times 8 = 160 \text{ m}^2$. Small rectangle area = $6 \times 3 = 18 \text{ m}^2$. Remaining = $160 - 18 = 142 \text{ m}^2$.
- 19) **Choice A is correct.** (8.SP.A.4) Joint relative frequency of flowering and fertilizer: $\frac{98}{200} = 0.49 = 49\%$.
- 20) **Choice B is correct.** (8.G.B.8) Absolute deviations: $|20 - 27.5| = 7.5$, $|25 - 27.5| = 2.5$, $|30 - 27.5| = 2.5$, $|35 - 27.5| = 7.5$. Sum = 20. MAD = $20/4 = 5$.
- 21) **The correct answer is A, B.** (8.EE.B.6) Options A and B both have slope 4, making them parallel. Option C has slope -4 , option D has slope $\frac{1}{4}$, and option E has slope 2, so none of these match.
- 22) **Choice A is correct.** (8.G.B.7) Independent events: $P(H \text{ and } 4) = P(H) \times P(4) = \frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$.
- 23) **The correct answer is 7.** (8.EE.C.8b) Substitute $(4, 1)$: $2(4) - 1 = 7$.
- 24) **Choice C is correct.** (8.EE.C.7b) Apply the Counting Principle: $10 \text{ appetizers} \times 5 \text{ sides} \times 6 \text{ desserts} = 300$ different meals.
- 25) **Choice C is correct.** (8.SP.A.2) Reading from the trend line at $x = 7$, the corresponding y -value is just under 7, so the best estimate is approximately 7.
- 26) **Choice C is correct.** (8.NS.A.1) For whole numbers, a rational square root means the square root is actually a whole number. That happens only for perfect squares such as 1, 4, 9, 16, and 25.
- 27) **Choice C is correct.** (8.NS.A.1) When we subtract $10x - x = 7.\bar{7} - 0.\bar{7}$, we get 7 (not 0.7). The repeating parts cancel perfectly, leaving the integer 7.



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Hi, Calm Solver!

◇ This broad and demanding book gave you seven strong Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. A calm mind can see choices more clearly. That matters in Grade 8, where one problem may have several possible entry points. ◇

★ **Remember this:** You practiced building calm by doing full tests. Each completed page is rehearsal for staying steady when the real test feels serious. ★

Calm-Test Moves

- **Pause:** Give your brain one quiet second.
- **Choose:** Pick the first useful step.
- **Continue:** Do not demand perfection immediately.
- **Check:** Use review time wisely.

Grade 8 test-day tip: If you feel rushed, slow your reading for one sentence. Clear reading saves time.

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

Jay Daie

Your Calm-Test Coach

PRACTICE TODAY SUCCEED TOMORROW!

Give your child the confidence and skills they need with **7 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!

GRADE 8

Practice
Today
Succeed
Tomorrow!

Algebra

Geometry

Statistics

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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BUILD CONFIDENCE. SHARPEN SKILLS. ACE YOUR EXAM!