

6 Delaware

Smarter Balanced

GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving For
Comprehensive Assessment Programs



6 PRINTED
TESTS



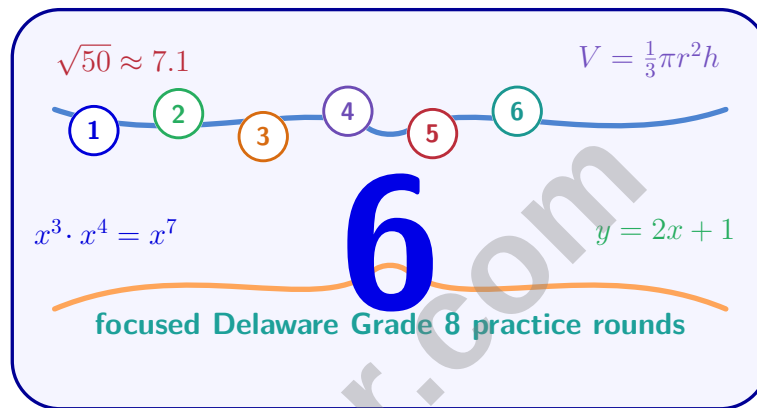
2 ONLINE
TESTS



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

6 Delaware Smarter Balanced Grade 8 Math Practice Tests

Standards-Based Practice for Grade 8 Algebra, Geometry, Data, and Reasoning



Six 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!

Six focused rounds for sharper Smarter Balanced math thinking

This book gives you six 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 six-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?

Six Smarter Balanced tests, 240 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 4–6	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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- 1) Two students solve $2x + 5 = 11$ and get different answers: Student A gets $x = 3$ and Student B gets $x = 4$. Without solving, how can you determine which student is correct?

- ☐ A. Substitute each value into the original equation to check which one works
- ☐ B. Solve the equation and see who matched your answer
- ☐ C. Check which value is smaller
- ☐ D. Divide 11 by 2 to see which is closer

- 2) For $y = 2.5x + 5$, what is the y -intercept?

- 3) Which statement is false?

- ☐ A. Every whole number is rational
- ☐ B. No irrational number can be written as a fraction
- ☐ C. $\sqrt{9}$ is rational
- ☐ D. π is rational

- 4) Which error did the student make when converting 0.000891 to scientific notation? Student wrote: 8.91×10^{-3} instead of 8.91×10^{-4} .

- ☐ A. Moved decimal the wrong direction
- ☐ B. Coefficient outside $[1, 10)$
- ☐ C. Wrong sign on exponent
- ☐ D. Counted decimal places incorrectly



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5) Simplify $\frac{m^8}{m^5} \cdot m^2$.

☐ A. m^{15}

☐ B. m^1

☐ C. m^{13}

☐ D. m^5

6) A student claims $\sqrt{50}$ is between 5 and 6 because 50 is between 5 and 6. What is the student's error?

☐ A. Correct reasoning

☐ B. Should use 7 and 8 instead

☐ C. $\sqrt{50}$ is actually an integer

☐ D. Should compare 50 to perfect squares, not integers

7) Which is the best estimate of $\frac{\pi}{\sqrt{2}}$?

☐ A. 1.5

☐ B. 4.4

☐ C. 3.1

☐ D. 2.2

8) A young professional has debt: credit card \$1,500 at 18% APR, student loan \$10,000 at 4% APR. In one year with no payments, approximately how much additional interest accumulates?

☐ A. \$270

☐ B. \$400

☐ C. \$670

☐ D. \$1,770

9) A square picture frame has an area of 169 square inches. What is the length of one side of the frame?

☐ A. 12 inches

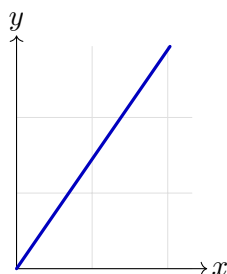
☐ B. 15 inches

☐ C. 14 inches

☐ D. 13 inches



10) Which point must be on the graph of $y = 2x$?



- ☐ A. (1, 2) ☐ C. (2, 1)
☐ B. (1, 3) ☐ D. (0, 2)

11) A student claims: "If input 5 appears three times in a table, it cannot be a function." Is the student correct?

- ☐ A. Yes, any repeated input means it is not a function.
☐ B. No, repeated inputs are never a problem.
☐ C. No, repeated inputs are only a problem if outputs differ.
☐ D. Yes, the domain cannot have repeated values.

12) Which table would represent a NONLINEAR function with constant second differences?

x	0	1	2	3
1st diff.	—	1	3	5
2nd diff.	—	—	2	2

- ☐ A. It is linear because first differences exist
☐ B. It is quadratic because second differences are constant
☐ C. It is cubic because second differences are positive
☐ D. It is exponential because differences vary



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- 1) If a segment has length 15 units and is dilated by scale factor $\frac{2}{3}$, what is the length of the dilated segment?

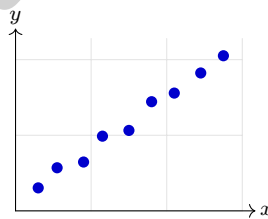
☐ A. 10 units ☐ C. 22.5 units
☐ B. 15 units ☐ D. 20 units

- 2) Two complementary angles have measures of x and $2x + 6$. Write and solve an equation to find both angle measures.

- 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)

A scatter plot shows hours of study and test scores for 30 students. As study hours increase, test scores also increase. What type of correlation does this show?

☐ A. Positive correlation ☐ C. No correlation
☐ B. Negative correlation ☐ D. Causal relationship



- 5) In a study of 150 students' sleep habits, 90 sleep at least 8 hours and 60 sleep less. Among those sleeping 8+ hours, 63 report feeling rested. What is the joint frequency (as a fraction) of students sleeping 8+ hours and reporting feeling rested?

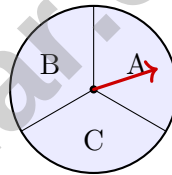
- ☐ A. $\frac{63}{150}$
☐ C. $\frac{90}{150}$
☐ B. $\frac{63}{90}$
☐ D. $\frac{63}{60}$

6)

Test Scores	88	92	90	86	94
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Five students scored as shown. The mean is 90. Calculate the MAD.

- ☐ A. 2
 ☐ C. 2.4
☐ B. 3
 ☐ D. 4
- 7) A fair spinner with sections A, B, C (each $\frac{1}{3}$ probability) is spun three times. What is the probability of getting C on all three spins?

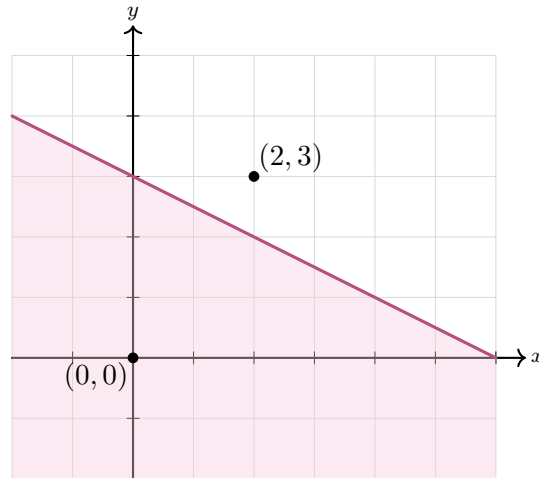


- ☐ A. $\frac{1}{9}$
☐ C. $\frac{3}{27}$
☐ B. $\frac{1}{27}$
☐ D. $\frac{1}{3}$
- 8) A school is electing a president, vice-president, and treasurer from 9 candidates. How many ways can these positions be filled?

- ☐ A. $9 + 8 + 7 = 24$
☐ C. $\binom{9}{3} = 84$
☐ B. $9 \times 8 \times 7 = 504$
☐ D. $9^3 = 729$



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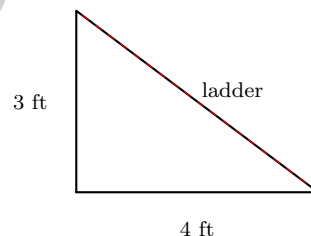


1)

The graph has a solid line with shading below. Two points are marked: $(0, 0)$ (in shaded region) and $(2, 3)$ (above the line). Which inequality is graphed?

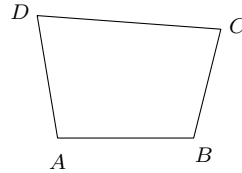
- ☐ A. $y < -\frac{1}{2}x + 3$ (forgot to flip when dividing by $-\frac{1}{2}$) ☐ C. $y \leq -\frac{1}{2}x + 3$ (correct)
☐ B. $y \geq -\frac{1}{2}x + 3$ (reversed shading AND boundary inclusion) ☐ D. $y > -\frac{1}{2}x + 3$ (solid line with shading above)

2) A ladder leans against a wall. The base is 4 feet from the wall, and the top reaches 3 feet up the wall. What is the length of the ladder?



- ☐ A. 7 feet ☐ C. $\sqrt{7}$ feet
☐ B. 5 feet ☐ D. 1 foot



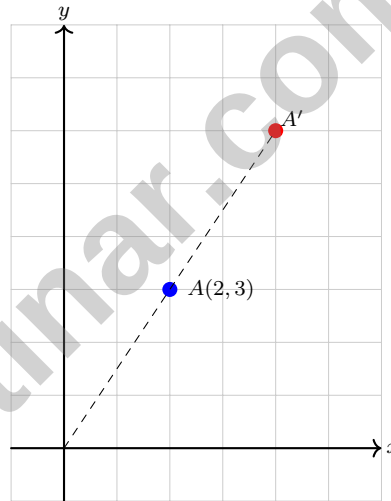


3)

A quadrilateral has angles $A = 85^\circ$, $B = 95^\circ$, $C = 100^\circ$. What is angle D ?

☐ A. 70° ☐ C. 90° ☐ B. 80° ☐ D. 100°

- 4) Point A is at $(2, 3)$ and is dilated by a scale factor of 2 from the origin. Where is the dilated point A' ?

☐ A. $(1, 1.5)$ ☐ C. $(2, 3)$ ☐ B. $(4, 6)$ ☐ D. $(2, 5)$ 

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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 A is correct.** (8.EE.C.7) Substitution is the definitive test: $2(3) + 5 = 11$ ✓ and $2(4) + 5 = 13 \neq 11$ ✗. Student A is correct.
- 2) **The correct answer is 5.** (8.SP.A.2) The constant term is the y -intercept, so it is 5.
- 3) **Choice D is correct.** (8.NS.A.1) This is false. π is irrational; it cannot be written as a fraction of two integers and has a non-terminating, non-repeating decimal expansion. All other statements are true.
- 4) **Choice D is correct.** (8.EE.A.3) 0.000891 requires moving the decimal 4 places right to get 8.91, so it is 8.91×10^{-4} , not 8.91×10^{-3} .
- 5) **Choice D is correct.** (8.EE.A.1) First apply quotient rule: $\frac{m^8}{m^5} = m^3$. Then multiply: $m^3 \cdot m^2 = m^{3+2} = m^5$.
- 6) **Choice D is correct.** (8.NS.A.2) The student confused the radicand 50 with the value of $\sqrt{50}$. Since $49 < 50 < 64$ (i.e., $7^2 < 50 < 8^2$), we have $7 < \sqrt{50} < 8$, not $5 < \sqrt{50} < 6$.
- 7) **Choice D is correct.** (8.NS.A.2) $\frac{\pi}{\sqrt{2}} \approx \frac{3.14}{1.41} \approx 2.23$.
- 8) **Choice C is correct.** (8.G.B.7) Credit card interest: $1500 \times 0.18 = \$270$. Student loan interest: $10000 \times 0.04 = \$400$. Total: $\$270 + \$400 = \$670$.
- 9) **Choice D is correct.** (8.EE.A.2) If the area is 169 square inches, then $s^2 = 169$, so $s = \sqrt{169} = 13$ inches.
- 10) **Choice A is correct.** (8.EE.B.5) For $y = 2x$: at $x = 1$, $y = 2(1) = 2$. Only choice A gives the correct point.
- 11) **Choice C is correct.** (8.F.A.1) A relation is a function only if each input has exactly one output. If input 5 appears three times but with the same output, it is still a function (just redundantly listed).
- 12) **Choice B is correct.** (8.F.A.3) Constant second differences indicate a quadratic (degree-2 polynomial) function, which is nonlinear.
- 13) **Choice A is correct.** (8.EE.B.5) Line M : slope $= \frac{5}{2} = 2.5$. Line N : slope $= \frac{6}{3} = 2$. Since $2.5 > 2$, line M is steeper.
- 14) **Choice C is correct.** (8.EE.C.8c) Let c = liters of colored paint. Then white paint $= 50 - c$. The mixture is 60% colored: $c = 0.60(50) = 30$ L.
- 15) **Choice B is correct.** (8.F.A.1) Since $1 < 1.5 \leq 2$, use the second rule: $f(1.5) = 0.75$. Cost is \$0.75.
- 16) **Choice C is correct.** (8.G.C.9) Radius $r = 5$ feet. Lateral (curved) surface area $= 2\pi rh = 2(3.14)(5)(20) = 628$ sq. ft. Cost $= 628 \times \$2 = \$1,256$.
- 17) **Choice B is correct.** (8.G.A.1) Figure 2 is the mirror image of Figure 1 across the y -axis. Figure 3 is the mirror image of Figure 1 across the x -axis. The asymmetric triangle shape helps show the reflections clearly.
- 18) **Choice B is correct.** (8.SP.A.3) The line goes from $(0, 3.0)$ to $(4, 4.2)$ on the graph (representing \$30,000 to \$42,000). Slope $= \frac{4.2-3.0}{4-0} = \frac{1.2}{4} = 0.3$ (in units of \$10,000), or \$3000/year.
- 19) **The correct answer is A,C.** (8.G.A.4) Correct: (A) Corresponding angles are congruent — definition of similarity. (C) Corresponding sides are proportional — they scale by a constant factor k . Incorrect: (B) Equal length is congruence, not similarity. (D) Congruence requires equality; similarity allows scaling. (E) Scale factor can be any positive number; $k < 1$ is a reduction, still similarity.
- 20) **Choice A is correct.** (8.EE.B.6) Slope $= \frac{4-0}{2-(-2)} = \frac{4}{4} = 1$. Using $(-2, 0)$: $0 = 1(-2) + b$ gives $b = 2$.
- 21) **Choice D is correct.** (8.EE.C.8b) Base (20) plus texts at 0.10 each (0.10 t), total at most 35.
- 22) **Choice D is correct.** (8.EE.C.8b) Test $(3, 2)$: $3 + 2 = 5 \not\leq 4$ FALSE. The other points all satisfy $x + y \leq 4$.
- 23) **Choice C is correct.** (8.G.C.9) $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 729 = 3052.08$ ft³.
- 24) **Choice D is correct.** (8.EE.A.4) Divide coefficients: $2.8 \div 7 = 0.4$. Subtract exponents: $10^{7-4} = 10^3$. Rewrite: $0.4 \times 10^3 = 4 \times 10^2$.
- 25) **The correct answer is $\frac{1}{2}$.** (8.G.B.7) Sample space: HH, HT, TH, TT. Exactly one heads: HT, TH. That's 2 of 4. $P = \frac{1}{2}$.
- 26) **Choice C is correct.** (8.EE.C.8a) For a system to have no solution, the lines must be parallel. This requires the same slope but different y -intercepts.



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Hi, Confident Learner!

◇ This deep and steady book gave you six full 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

PRACTICE TODAY. ACHIEVE TOMORROW.

6

Give your child the confidence and skills they need with **6 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!

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



6 PRINTED TESTS

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2 ONLINE TESTS



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