

10

Delaware

Smarter Balanced

GRADE

8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

10

PRINTED
TESTS



2

ONLINE
TESTS



Build Confidence



Master Key Math Skills

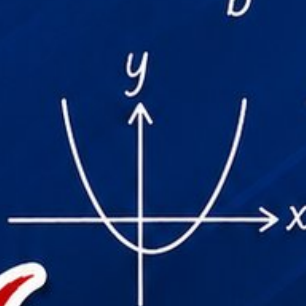
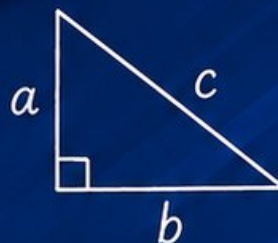


Answer Explanations for
Every Question



Test-Taking Strategies
That Work

$$y = mx + b$$



$$3x - 7 = 2(x + 5)$$
$$x = 17$$

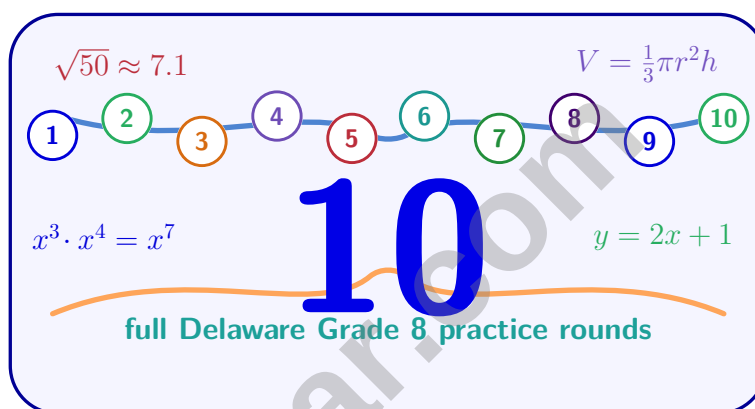


USE THESE TWO
**ADDITIONAL ONLINE
PRACTICE TESTS**

FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.

10 Delaware Smarter Balanced Grade 8 Math Practice Tests

Delaware Grade 8 Smarter Balanced Practice for compact, focused review of functions, equations, geometry, data analysis, probability, and reasoning



Ten complete 40-question Grade 8 Smarter Balanced practice rounds with linear relationships, scientific notation, real numbers, equations, functions, 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!

Ten focused rounds for sharper Delaware Smarter Balanced math thinking

This book gives you ten full Grade 8 Smarter Balanced math practice tests. Each round is built to help you notice structure, compare quantities, use linear reasoning, handle real numbers, and explain your thinking with care.

Grade 8 standards focus: This page supports **Properties of Integer Exponents** (8.EE.A.1): Know and apply the properties of integer exponents to generate equivalent numerical expressions. Another recurring target is **Rational and Irrational Numbers** (8.NS.A.1): Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats....

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 ten-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 a proportion, equation, diagram, number line, 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.

Grade 8 standards focus: Keep the routine connected to **Operations with Scientific Notation** (8.EE.A.4): Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. The same routine helps with **Square Roots and Cube Roots** (8.EE.A.2): Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational....

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?

Ten Delaware Smarter Balanced tests, 400 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Linear relationships, integer exponents, scientific notation, real-number reasoning, and careful reading.
Tests 4–6	Expressions, equations, inequalities, transformations, geometry, and multi-step problem solving.
Tests 7–9	Data analysis, probability, mixed review, stamina, and choosing efficient strategies.
Test 10	A final Delaware round to show growth across the whole book.
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.

Grade 8 standards focus: Use these habits while practicing **Slope and the Equations of a Line** (8.EE.B.6): Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line. Derive $y = mx$ and $y = \dots$. You will also meet **Solving Linear Equations in One Variable** (8.EE.C.7): Solve linear equations in one variable, including equations with one solution, infinitely many solutions, or no solutions.

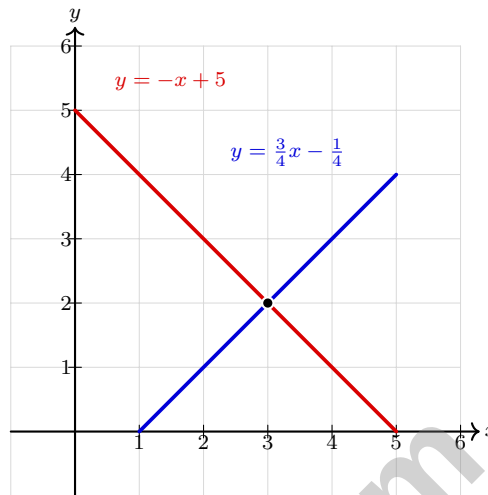


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1) Use the graph to identify the solution to the system: $y = -x + 5$ and $y = \frac{3}{4}x - \frac{1}{4}$.

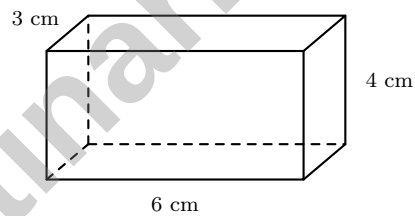


☐ A. (2, 3)

☐ C. (4, 1)

☐ B. (5, 0)

☐ D. (3, 2)



2)

A rectangular prism is shown with dimensions $6 \text{ cm} \times 4 \text{ cm} \times 3 \text{ cm}$. What is its surface area?

☐ A. 72 cm^2

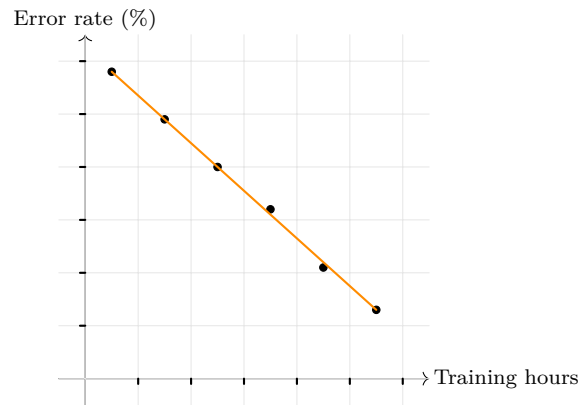
☐ C. 144 cm^2

☐ B. 108 cm^2

☐ D. 168 cm^2



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3)

A training program finds error rate follows $E = -0.9t + 6$, where E is error rate (

- ☐ A. Error rate increases as training time increases ☐ C. Error rate stays constant regardless of training
☐ B. Error rate decreases as training time increases ☐ D. Training has no effect on errors

4)

x	y
0	2
1	5
2	8
3	11

The table shows the relationship between x and y on a line. What is the slope?

- ☐ A. 2 ☐ C. $\frac{1}{3}$
☐ B. 11 ☐ D. 3



5) Factor completely: $2x^2 + 10x + 8$.

☐ A. $2(x^2 + 5x + 4)$

☐ C. $2(x + 2)(x + 4)$

☐ B. $(x + 2)(2x + 4)$

☐ D. $2x(x + 5) + 8$

6) A scientist collects data on plant height over weeks. The table shows:

Week	0	1	2	3
Height (cm)	5	8	12	17

Is the growth linear or nonlinear?

☐ A. Linear; first difference is constant at 5

☐ C. Linear; the plant always grows

☐ D. Nonlinear; cannot predict height

☐ B. Nonlinear; differences are 3, 4, 5 (not constant) after week 3

7) A plant grows such that its height is modeled by $h = 2t + 15$, where h is height in cm and t is time in weeks. Interpret the meaning of the number 2 in this equation.

☐ A. The plant starts at a height of 2 cm.

☐ C. The plant reaches a height of 2 cm.

☐ D. The plant grows for 2 weeks total.

☐ B. The plant grows 2 cm per week.



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1) $\frac{5 \times 10^{-2}}{2.5 \times 10^{-5}} = ?$

☐ A. 0.2×10^3

☐ C. 2×10^3

☐ B. 2.5×10^{-7}

☐ D. 7.5×10^{-7}

2) 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

3) Three similar figures X , Y , and Z have corresponding sides in the ratios $X : Y = 3 : 4$ and $Y : Z = 4 : 7$. If X has a side of 6 cm, what is the length of the corresponding side in Z ?

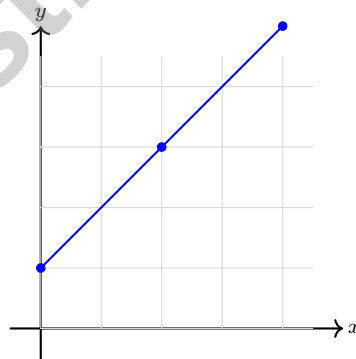
☐ A. 14 cm

☐ C. 8 cm

☐ B. 10.5 cm

☐ D. 18 cm

4) The graph shows function g . What is $g(2)$?



☐ A. 2

☐ C. 1

☐ B. 3

☐ D. 4



5) If you divide an irrational number by a nonzero rational number, the result is:

- ☐ A. Always rational ☐ C. Always a whole number
☐ B. Could be either ☐ D. Always irrational

6) Two hikers start from the same point, walking in opposite directions. One walks at 4 mph, the other at 5 mph. After how many hours are they 27 miles apart?

7) What is $0.\overline{6}$ as a fraction?

- ☐ A. $\frac{1}{6}$ ☐ C. $\frac{6}{99}$
☐ B. $\frac{6}{10}$ ☐ D. $\frac{2}{3}$

8) Which is larger: $\sqrt{15}$ or $\sqrt{14}$?

- ☐ A. They are equal ☐ C. $\sqrt{14}$
☐ B. Cannot compare ☐ D. $\sqrt{15}$

9) Which is the best estimate of $\sqrt{2} \times \sqrt{3}$?

- ☐ A. 2.0 ☐ C. 3.0
☐ B. 5.0 ☐ D. 2.4

10) Which expression equals 4.25×10^{-1} ?

- ☐ A. 425 ☐ C. 42.5
☐ B. 4.25 ☐ D. 0.425



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- 1) A recipe uses 2 cups of flour for every 3 eggs. If e is the number of eggs, which expression gives the amount of flour needed?

☐ A. $f = \frac{2e}{3}$

☐ B. $f = \frac{3e}{2}$

☐ C. $f = 3e + 2$

☐ D. $f = 2e - 3$

- 2) If $x^3 = 512$, what is x ?

☐ A. 7

☐ B. 10

☐ C. 9

☐ D. 8

- 3) Plan X: \$10/week, start \$0. Plan Y: \$8/week, start \$50. After how many weeks equal?

- 4) Which describes a zero slope?

☐ A. A horizontal line☐ B. A vertical line☐ C. A diagonal line with positive rate of change☐ D. A line with undefined slope

- 5) A 300 mL mixture contains 40% juice and 60% water. How much pure juice must be added to make the mixture 60% juice?

☐ A. 75 mL☐ B. 100 mL☐ C. 150 mL☐ D. 200 mL

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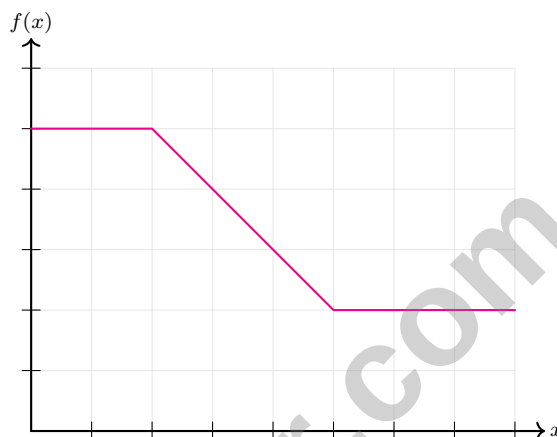
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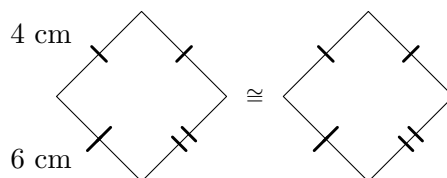
- 6) A line passes through $(0, -3)$ and $(2, 1)$. What is its slope?



7)

Over the interval $[0, 3]$, is the function increasing, decreasing, or constant?

- ☐ A. Constant
 ☐ C. Increasing
☐ B. Both increasing and constant
 ☐ D. Decreasing
- 8) Two congruent kites are shown with matching tick marks. In Kite 1, two adjacent sides each measure 4 cm, and the other two adjacent sides each measure 6 cm. What are the side lengths of Kite 2?



- ☐ A. 2 cm, 2 cm, 3 cm, 3 cm
 ☐ C. 8 cm, 8 cm, 12 cm, 12 cm
☐ B. 4 cm, 4 cm, 6 cm, 6 cm
 ☐ D. 5 cm, 5 cm, 7 cm, 7 cm



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 D is correct.** (8.EE.C.8a) The two lines intersect at the marked point. Verify: $y = -3 + 5 = 2$ ✓ and $y = \frac{3}{4}(3) - \frac{1}{4} = \frac{9}{4} - \frac{1}{4} = 2$ ✓.
- 2) **Choice B is correct.** (8.G.C.9) $SA = 2(6 \times 4 + 6 \times 3 + 4 \times 3) = 2(24 + 18 + 12) = 2(54) = 108 \text{ cm}^2$.
- 3) **Choice B is correct.** (8.SP.A.3) Negative slope means as one variable increases, the other decreases. More training leads to fewer errors.
- 4) **Choice D is correct.** (8.EE.B.6) The slope is the rate of change: $\frac{\Delta y}{\Delta x} = \frac{3}{1} = 3$ (each increase of 1 in x gives 3 more in y).
- 5) **Choice C is correct.** (8.EE.C.7) GCF is 2: $2x^2 + 10x + 8 = 2(x^2 + 5x + 4) = 2(x + 2)(x + 4)$.
- 6) **Choice B is correct.** (8.F.A.3) First differences: $8 - 5 = 3$, $12 - 8 = 4$, $17 - 12 = 5$. Non-constant differences indicate nonlinear growth.
- 7) **Choice B is correct.** (8.F.B.4) In $h = mt + b$, the slope $m = 2$ represents the rate of change: 2 cm per week. The number 15 is the initial height (intercept).
- 8) **Choice B is correct.** (8.F.B.5) The change in slope (from $\frac{3}{4}$ to $(4.5 - 3)/(7 - 4) = 0.5$ per meter) indicates a change in the rate structure. Option B explains why: different geological layers can cost differently. A is wrong because the slope changes, C is wrong because the line continues, and D is wrong because the slope stays positive.
- 9) **Choice B is correct.** (8.G.A.3) Area scales by k^2 . With $k = \frac{1}{3}$: $45 \times \left(\frac{1}{3}\right)^2 = 45 \times \frac{1}{9} = 5$.
- 10) **Choice A is correct.** (8.G.B.6, 8.G.B.7) Pythagorean Theorem: $a^2 + b^2 = c^2$, so $6^2 + 8^2 = c^2$, $36 + 64 = 100$, $c = \sqrt{100} = 10$.
- 11) **Choice A is correct.** (8.G.B.8) $\sqrt{5^2 + 5^2} = \sqrt{25 + 25} = \sqrt{50}$. Check others: $(7, 2)$ gives $\sqrt{53}$; $(5, 2)$ gives $\sqrt{29}$; $(3, 4)$ gives 5.
- 12) **Choice B is correct.** (8.G.C.9) Correct formula: $V = \pi r^2 h = 3.14 \times 3^2 \times 8 = 3.14 \times 9 \times 8 = 226.08 \text{ cm}^3$. Student omitted r^2 , computing πrh instead.
- 13) **Choice B is correct.** (8.G.C.9) $V_X = \frac{1}{3} \times 9 \times 10 = 30 \text{ cm}^3$. $V_Y = \frac{1}{3} \times 36 \times 10 = 120 \text{ cm}^3$. Ratio: $\frac{30}{120} = 1 : 4$.
- 14) **Choice D is correct.** (8.G.B.7) Rectangle area = $12 \times 8 = 96 \text{ ft}^2$. Each triangle area = $\frac{1}{2} \times 6 \times 4 = 12 \text{ ft}^2$. Two triangles = 24 ft^2 . Total = $96 + 24 = 120 \text{ ft}^2$.
- 15) **Choice D is correct.** (8.SP.A.1) The tight downward trend shows a strong negative association: as phone usage increases, battery life decreases. This is a clear negative correlation pattern.
- 16) **The correct answer is \$600.** (8.G.B.7) $50 \times 12 = \$600$.
- 17) **Choice B is correct.** (8.SP.A.4) Relative frequency of improvement among medicated patients: $\frac{160}{200} = 0.80$.
- 18) **Choice A is correct.** (8.G.B.8) Absolute deviations: $|2 - 5| = 3$ (three times), $|4 - 5| = 1$ (twice), $|6 - 5| = 1$, $|8 - 5| = 3$ (twice). Sum = $9 + 2 + 1 + 6 = 14$. MAD = $14/8 = 1.75$.
- 19) **Choice C is correct.** (8.EE.A.2) Area = 361, so $s = \sqrt{361} = 19 \text{ cm}$. Perimeter = $4s = 4 \times 19 = 76 \text{ cm}$.
- 20) **Choice C is correct.** (8.EE.A.4) $\frac{1.4 \times 10^{-10}}{7 \times 10^{-15}} = \frac{1.4}{7} \times 10^5 = 0.2 \times 10^5 = 2 \times 10^4$.
- 21) **The correct answer is A,C.** (8.G.B.7) A is correct: $P(\text{heads}) = \frac{1}{2}$. C is correct: $P(\text{heads and 4}) = \frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$. B is wrong: $P(4) = \frac{1}{6}$. D is wrong: total outcomes = 12. E is wrong: $P(\text{not heads}) = \frac{1}{2}$.
- 22) **Choice C is correct.** (8.F.A.1) Constant functions are functions. For every x , the output is always 7, satisfying the one-input-one-output requirement.
- 23) **Choice B is correct.** (8.F.A.2) First base cost: \$5. Second base cost: \$7. Since $7 > 5$, second is higher.
- 24) **Choice B is correct.** (8.G.A.2) If the quadrilaterals are congruent with P corresponding to T, then $\angle P$ must equal $\angle T$. Since $75^\circ \neq 85^\circ$, the claim of congruence is false.
- 25) **Choice D is correct.** (8.G.A.5) Corresponding angles are equal: $5x - 10 = 3x + 50$, so $2x = 60$ and $x = 30$.
- 26) **Choice C is correct.** (8.G.B.7) If the angles are $3k$ and $7k$, then $3k + 7k = 90$, so $10k = 90$ and $k = 9^\circ$. The smaller angle is $3 \times 9 = 27^\circ$.



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& answers

Hi, Brave Learner!

◇ No one gets stronger by only doing easy problems. The questions that slowed you down were part of the training. This full-length book gave you ten complete Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

★ **Remember this:** Mistakes are not proof that you cannot do math. They are directions. They show what to review, what to ask about, and what to practice next. ★

How to Use Mistakes

- **Name It:** Was it reading, setup, arithmetic, or checking?
- **Fix It:** Correct the work while the question is fresh.
- **Repeat It:** Try one similar problem soon.
- **Remember It:** Write the lesson in your own words.

Grade 8 test-day tip: Treat every corrected error as a point you are preparing to earn next time.

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

Jay Daie

Your Brave-Learning Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **10** full-length Math practice tests and **2** online tests to help Grade 8 students build confidence, strengthen skills, and excel on standardized assessments.

Each practice test is carefully crafted to reflect the latest standards and includes a variety of question types, realistic test conditions, and detailed answer explanations.

Perfect for classroom use, homework, test preparation, and extra practice at home.



THIS BOOK INCLUDES:

10

Full-Length
Printed Tests

2

Online
Practice Tests



Detailed Answers
& Explanations



MORE PRACTICE. GREATER RESULTS.

Give your child the tools to build strong math skills, confidence, and a positive attitude toward learning.

WHAT YOU'LL GAIN



Build Confidence

Practice regularly to feel prepared and test-ready.



Master Key Skills

Develop strong math skills and problem solving abilities.



Improve Understanding

Learn with clear explanations and step-by-step solutions.



Test Strategies

Learn proven strategies to approach every question with confidence.



Boost Performance

Apply your knowledge and achieve your best score!

TOPICS COVERED

- | | |
|---------------------------|----------------------------|
| ✓ The Number System | ✓ Statistics & Probability |
| ✓ Expressions & Equations | ✓ Data Analysis |
| ✓ Inequalities | ✓ Measurement |
| ✓ Functions | ✓ Pythagorean Theorem |
| ✓ Geometry | ✓ Surface Area & Volume |
| ✓ Ratios & Proportions | ✓ And More! |



2 ONLINE TESTS

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



2 EXTRA ONLINE TEST ACCESS CODE IS INSIDE THE BOOK!

Don't lose it—your extra practice and success start here!



PRACTICE
REGULARLY



STAY
FOCUSED



SOLVE
CONFIDENTLY



SUCCEED
BRIGHTLY