

3

Delaware

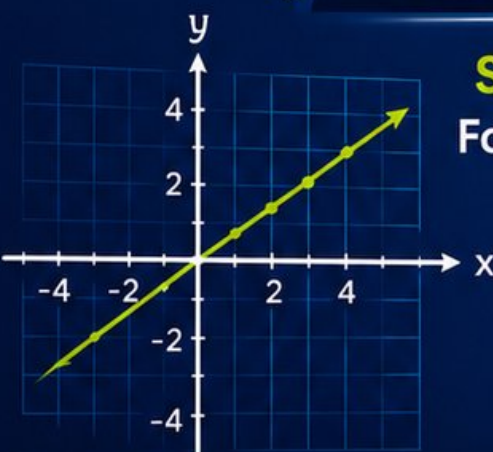
Smarter Balanced

GRADE 8

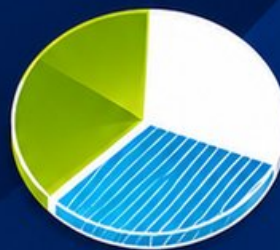
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$V = s^3$$



$$y = mx + b$$
$$2x + 5 = 13$$
$$x = 4$$



3 PRINTED TESTS



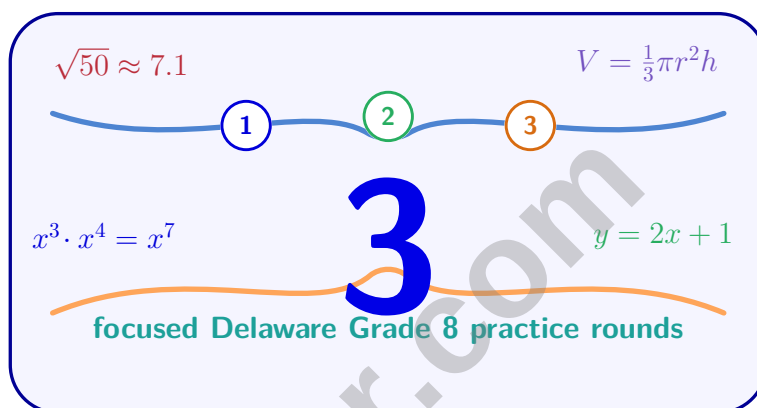
2 ONLINE TESTS



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

3 Delaware Smarter Balanced Grade 8 Math Practice Tests

Compact Delaware Test Prep for Grade 8 Math Growth



Three 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

★

Copyright ©

Testinar Inc

Published by Testinar Inc

Testinar.com

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the author, except in the case of brief quotations embodied in critical reviews and certain other noncommercial uses permitted by copyright law, including Section 107 or 108 of the 1976 United States Copyright Act.

This publication is independently produced and has no official connection to any state, district, or national testing program.

Test names and organizational names used herein are the property of their respective trademark holders.

★

Copyright ©

Welcome, Delaware Grade 8 Problem Solver!

Three focused rounds for sharper Smarter Balanced math thinking

This book gives you three 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 three-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?

Three Smarter Balanced tests, 120 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Test 3	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.



Scan me!
For more practice
& answers

Table of Contents



Testinar.com

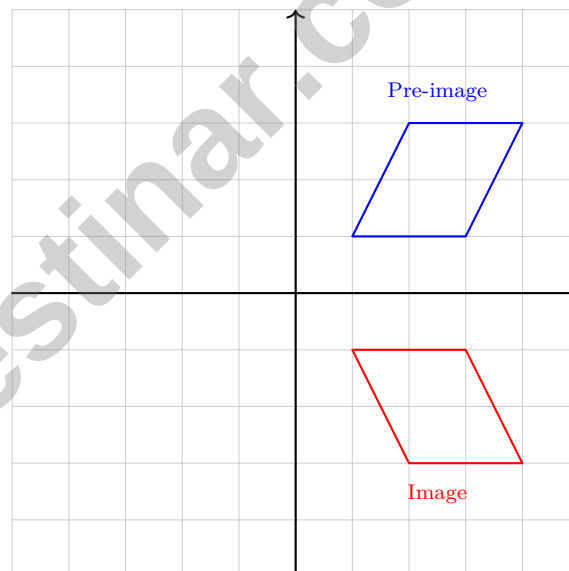
1) $\alpha(x) = -3x + 12$ and β table $(0, 12), (2, 6), (4, 0)$. Related how?

x	0	2	4
$\beta(x)$	12	6	0

- ☐ A. Identical ☐ C. Different slopes.
☐ B. Same slope, different intercepts. ☐ D. Cannot be determined.

2) A student calculates the surface area of a rectangular prism with dimensions $3 \text{ m} \times 4 \text{ m} \times 5 \text{ m}$ as: $SA = 2(3 \times 4) + 2(3 \times 5) + 2(4 \times 5) = 24 + 30 + 40 = 94 \text{ m}^2$. What is the error?

- ☐ A. The calculation is correct ☐ C. The student missed the bottom face
☐ B. The student forgot to add the second base ☐ D. The student mixed up length and width



3)

The figure shows a transformation. If this is a reflection across the x -axis, which vertex of the pre-image corresponds to the vertex at $(3, -1)$ in the image?

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



Scan me!
For more practice
& answers

4) Which value of x satisfies $2x + 6 = x + 12$?

☐ A. $x = 6$

☐ C. $x = 18$

☐ B. $x = 4$

☐ D. $x = 2$

5) Solve: $2(3 - x) \geq 4$

☐ A. $x \geq 1$

☐ C. $x \geq -1$

☐ B. $x \leq -1$

☐ D. $x \leq 1$

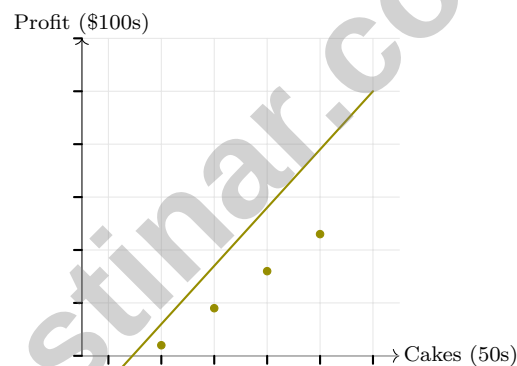
6) For the inequality $y \leq -\frac{1}{2}x + 3$, which point is in the solution region?

☐ A. $(0, 5)$

☐ C. $(2, 4)$

☐ B. $(0, 0)$

☐ D. $(4, 4)$



7)

A bakery's profit model is $P = 3.2c - 250$, where P is profit and c is the number of cakes sold. How many whole cakes must be sold to achieve at least a \$500 profit?

☐ A. 156 cakes

☐ C. 235 cakes

☐ B. 172 cakes

☐ D. 281 cakes



8) A college savings plan earns 7% compound interest annually. If \$5,000 is invested for 10 years, approximately how much will be accumulated?

- ☐ A. \$8,500 ☐ C. \$11,500
☐ B. \$13,800 ☐ D. \$9,835

9) Which expression is equivalent to $3^2 \cdot 3^5$?

- ☐ A. 3^{10} ☐ C. 3^7
☐ B. 9^7 ☐ D. 3^3

10) Explain why 10^5 is 100 times greater than 10^3 . Use exponents in your reasoning.

11) A farmer plants rows of corn. Each row contains 20 plants. The relationship between rows (x) and total plants (y) is proportional. How many plants are in 8 rows?

- ☐ A. 120 plants ☐ C. 160 plants
☐ B. 140 plants ☐ D. 180 plants

12) What is the slope of the line that passes through (5, 2) and (5, 7)?

- ☐ A. 0 ☐ C. Undefined
☐ B. 1 ☐ D. 5



Scan me!
For more practice
& answers

1) A sphere has a volume of approximately 523.33 m^3 . What is its radius? (Use $\pi \approx 3.14$.)

☐ A. 4 m

☐ C. 10 m

☐ B. 5 m

☐ D. 20 m

2) Convert $0.1\overline{35}$ to a fraction in simplest form.

☐ A. $\frac{1}{135}$

☐ C. $\frac{135}{999}$

☐ B. $\frac{135}{1000}$

☐ D. $\frac{134}{990} = \frac{67}{495}$

3) Between which two consecutive integers does $\sqrt[3]{20}$ lie?

☐ A. 4 and 5

☐ C. 3 and 4

☐ B. 1 and 2

☐ D. 2 and 3

4) Which is larger: $\sqrt{3} \times \sqrt{8}$ or 4.8?

☐ A. Cannot be determined

☐ C. They are exactly equal

☐ B. 4.8 is larger

☐ D. $\sqrt{3} \times \sqrt{8}$ is larger

5) If $5.7 \times 10^? = 57,000$, what is the exponent?

☐ A. 3

☐ C. 5

☐ B. 2

☐ D. 4

6) A regular hexagonal pyramid has a regular hexagonal base. The base has perimeter 24 cm and area $24\sqrt{3} \text{ cm}^2$. The slant height is 8 cm. What is the lateral surface area?

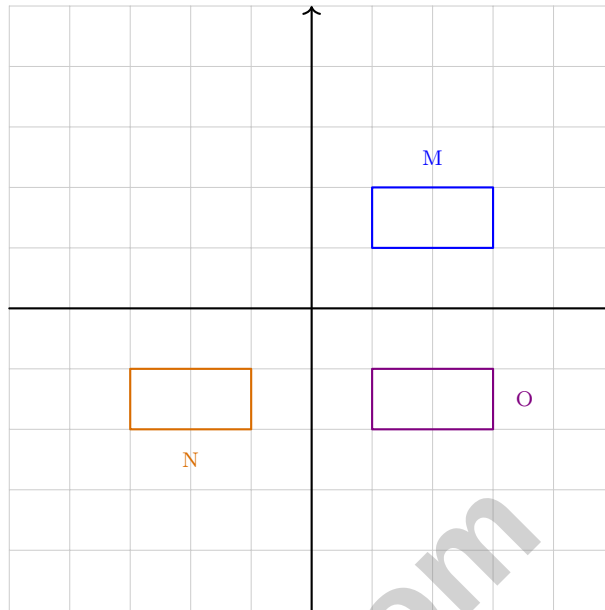
☐ A. 48 cm^2

☐ C. 96 cm^2

☐ B. 72 cm^2

☐ D. 144 cm^2





7)

If M is the original figure, which statement is true?

- ☐ A. M to N is a translation; M to O is a reflection
☐ B. M to N is a reflection; M to O is a translation
☐ C. M to N is a 180° rotation; M to O is a reflection across the x -axis
☐ D. Both N and O are obtained by rotations only

8) Solve for y : $\frac{y-3}{2} = 5$

- ☐ A. $y = 13$
☐ B. $y = 7$
☐ C. $y = 4$
☐ D. $y = 10$

9) If $g(x) = x^2 + 2$ and $g(x) = 11$, find the possible values of x .


Scan me!
For more practice
& answers

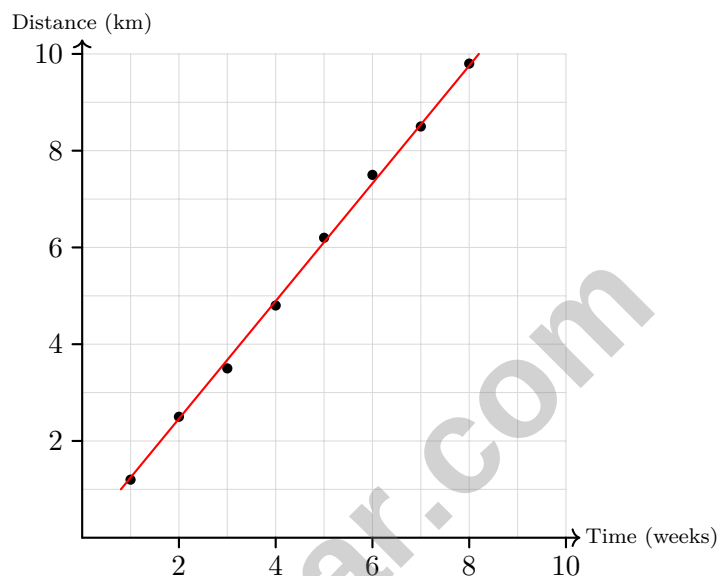
1) $\frac{8 \times 10^9}{\frac{2 \times 10^3}{4 \times 10^2}} = ?$

☐ A. 10^5

☐ C. 4×10^4

☐ B. 1×10^6

☐ D. 1×10^4



2)

A runner training program tracks distance over time. Based on the trend line, what is the approximate slope (distance per week)?

☐ A. 1 km per week

☐ C. 2 km per week

☐ B. 1.2 km per week

☐ D. 0.5 km per week

3) A cube is dilated by a scale factor of 2. If the original cube has volume 27 cm^3 , what is the volume of the dilated cube?

☐ A. 54 cm^3

☐ C. 216 cm^3

☐ B. 108 cm^3

☐ D. 81 cm^3



4) If $n(x) = \begin{cases} x + 2 & \text{if } x < 1 \\ 5 & \text{if } 1 \leq x < 4, \\ x - 1 & \text{if } x \geq 4 \end{cases}$ what is $n(2)$?

☐ A. 4☐ C. 3☐ B. 5☐ D. 1

5) Which is closest to $\sqrt{40}$?

☐ A. 5☐ C. 6.3☐ B. 6☐ D. 7

6) What is $0.\overline{345}$ as a fraction?

☐ A. $\frac{345}{1000}$ ☐ C. $\frac{345}{999}$ ☐ B. $\frac{3}{45}$ ☐ D. $\frac{342}{990} = \frac{19}{55}$

7) A reasonable decimal approximation for $\sqrt{21}$ is closest to?

☐ A. 4☐ C. 5☐ B. 5.5☐ D. 4.5

8) A rectangle's length is 4 cm more than its width. If the perimeter is 32 cm, what is the length?



Scan me!

For more practice
& answers

+ -

.....

49

.....

× ÷

Testinar.com

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.



Scan me!
For more practice
& answers

Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- Choice A is correct.** (8.F.A.2) β slope: $(6 - 12)/2 = -3$. Using $(0, 12)$: $\beta(x) = -3x + 12$. Same as α .
- Choice A is correct.** (8.G.C.9) The student correctly calculated $SA = 2(12) + 2(15) + 2(20) = 24 + 30 + 40 = 94 \text{ m}^2$. The formula $2(lw + lh + wh)$ accounts for all six faces (two of each type).
- Choice B is correct.** (8.G.A.1) Reflection across the x -axis uses $(x, y) \rightarrow (x, -y)$. The point $(3, 1)$ reflects to $(3, -1)$.
- Choice A is correct.** (8.EE.C.7) Subtract x and 6: $x = 6$. Check: $2(6) + 6 = 18$ and $6 + 12 = 18$ ✓. (Distractor B: arithmetic error; C: adding instead of subtracting.)
- Choice D is correct.** (8.EE.C.8b) Distribute: $6 - 2x \geq 4$. Subtract 6: $-2x \geq -2$. Divide by -2 (FLIP): $x \leq 1$.
- Choice B is correct.** (8.EE.C.8b) Test each point in $y \leq -\frac{1}{2}x + 3$: (A) $5 \leq -\frac{1}{2}(0) + 3 = 3$? NO. (B) $0 \leq 3$? YES. (C) $4 \leq -\frac{1}{2}(2) + 3 = 2$? NO. (D) $4 \leq -\frac{1}{2}(4) + 3 = 1$? NO.
- Choice C is correct.** (8.SP.A.3) Set $P = 500$: $500 = 3.2c - 250 \Rightarrow 3.2c = 750 \Rightarrow c = \frac{750}{3.2} \approx 234.4$. Since cakes are whole items, the bakery must sell at least 235 cakes.
- Choice D is correct.** (8.G.B.7) $A = 5000(1.07)^{10} \approx 5000 \times 1.967 = \$9,835$.
- Choice C is correct.** (8.EE.A.1) When multiplying powers with the same base, add exponents: $3^2 \cdot 3^5 = 3^{2+5} = 3^7$.
- The correct answer is 100.** (8.EE.A.3) When dividing powers with the same base, subtract the exponents. $10^{5-3} = 10^2$, and $10^2 = 100$, so 10^5 is 100 times larger than 10^3 .
- Choice C is correct.** (8.EE.B.5) Equation: $y = 20x$. For $x = 8$: $y = 20(8) = 160$ plants.
- Choice C is correct.** (8.EE.B.6) Both points have the same x -coordinate, making this a vertical line. Vertical lines have undefined slope.
- Choice A is correct.** (8.EE.C.8a) Parallel lines have the same slope but different y -intercepts. Both equations $y = 2x + 1$ and $y = 2x - 3$ have slope 2 but different intercepts (1 and -3). Option D is the same line (infinitely many solutions).
- Choice C is correct.** (8.EE.C.7) Difference of squares: $(x + 3)^2 - (x - 3)^2 = [(x + 3) + (x - 3)][(x + 3) - (x - 3)] = (2x)(6) = 12x$.
- Choice B is correct.** (8.F.A.3) The differences between consecutive y -values are $2 - 1 = 1$, $4 - 2 = 2$, $8 - 4 = 4$. These are not constant, which indicates the function is nonlinear.
- Choice A is correct.** (8.F.B.4) Using $y = mx + b$ with $m = -2$ and $b = 5$: equation is $y = -2x + 5$.
- Choice A is correct.** (8.F.B.5) Diminishing returns: initial rapid gains, then slower gains, then ceiling. The slope decreases then becomes zero.
- Choice C is correct.** (8.G.A.3) Reflection across $y = x$ swaps coordinates: $(0, -7) \rightarrow (-7, 0)$.
- Choice A is correct.** (8.G.A.5) Co-interior angles are supplementary: $(2x + 15) + (x + 45) = 180$, so $3x + 60 = 180$, giving $x = 40$.
- Choice B is correct.** (8.G.B.6, 8.G.B.7) Check: $6^2 + 8^2 = 36 + 64 = 100 = 10^2$. This is a scaled 3-4-5 triple (all multiplied by 2).
- The correct answer is A, C.** (8.NS.A.1) $\sqrt{169} = 13$ is rational (perfect square). The repeating decimal $0.777\ldots = \frac{7}{9}$ is rational. The other values are irrational: $\sqrt{170}$ (non-perfect square), 2π (irrational multiple of π), and $\sqrt{2} + 1$ (irrational plus rational is irrational).
- Choice A is correct.** (8.G.B.8) Check: $3^2 + 4^2 = 9 + 16 = 25 = 5^2$. This is a Pythagorean triple.
- Choice B is correct.** (8.G.C.9) Cylinder: $V_{\text{cyl}} = \pi r^2 h$; Cone: $V_{\text{cone}} = \frac{1}{3}\pi r^2 h = \frac{1}{3}V_{\text{cyl}}$.
- Choice C is correct.** (8.G.C.9) If height triples, volume triples (linear relationship with h in $V = \frac{1}{3}Bh$). New volume: $3 \times 240 = 720 \text{ ft}^3$.
- Choice C is correct.** (8.G.B.7) Each rectangle area $= 4 \times 2 = 8 \text{ m}^2$. Three rectangles $= 3 \times 8 = 24 \text{ m}^2$.
- Choice A is correct.** (8.G.A.5) For a nonagon ($n = 9$): $(9 - 2) \times 180 = 7 \times 180 = 1260^\circ$. The student is correct.
- Choice C is correct.** (8.SP.A.1) Even a strong correlation ($r = 0.88$) only shows association. The mattress company confuses correlation with causation. Better test scores might result from healthier habits, nutrition, or academic motivation—not specifically the mattress.



Hi, Grade 8 Math Star!

◇ You finished this practice set with real effort. Grade 8 math asks you to connect ideas, explain your thinking, and stay steady through multi-step problems. ◇

★ **Remember this:** Every page you completed helped build stronger habits: reading carefully, choosing a method, showing work, and checking whether the answer makes sense. You practiced across 3 full Grade 8 practice tests, and that repeated effort matters. ★

What You Built

- **Focus:** You stayed with challenging questions.
- **Accuracy:** You learned to slow down when details matter.
- **Reasoning:** You practiced explaining why a method works.
- **Readiness:** You are more prepared than when you started.

Grade 8 test-day tip: Before test day, review the questions that made you pause. Those are the best teachers.

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

Jay Daie

Your Grade 8 Math Friend

PRACTICE TODAY, ACHIEVE TOMORROW!

GRADE
8

Give your child the edge they need with **3 full-length** Grade 8 Math practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, boosting confidence, and preparing for 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.



Build Skills & Boost Confidence

Strengthen understanding and feel prepared for test day.

COVERS ALL ESSENTIAL TOPICS

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



2 Extra Online Practice Tests Included!

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

testinar.com/math8

PRACTICE. PREPARE. SUCCEED.



Testinar

More Practice. More Confidence.
Better Results.