

8

Delaware

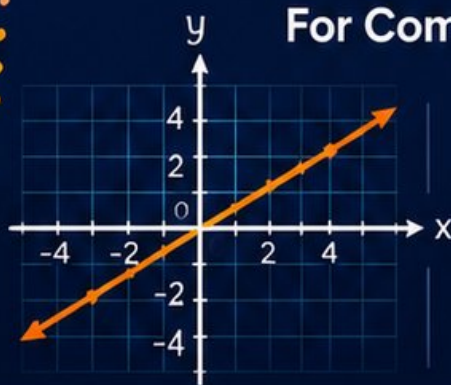
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GRADE 8

MATH

PRACTICE TESTS

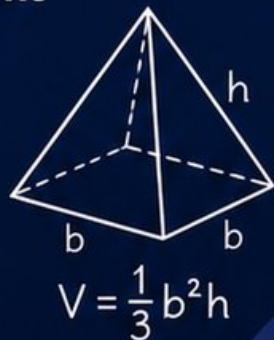
Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$A = \pi r^2$$

$$C = 2\pi r$$

$$V = \frac{1}{3}\pi r^2 h$$



$$V = \frac{1}{3}b^2 h$$



8

 PRINTED TESTS

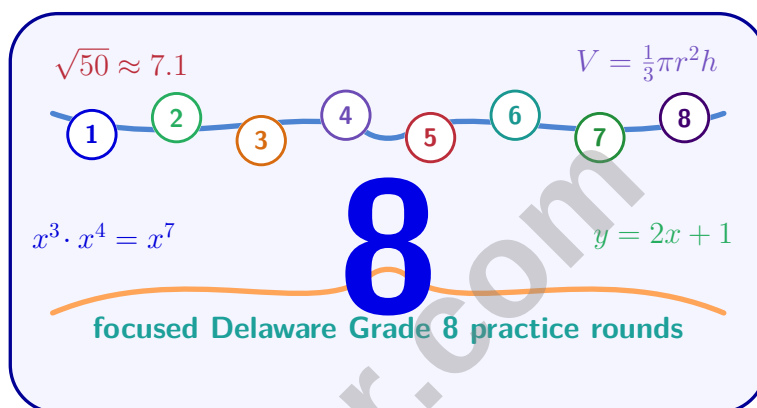
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 ONLINE TESTS

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

8 Delaware Smarter Balanced Grade 8 Math Practice Tests

Delaware Grade 8 Practice for Functions, Geometry, and Data Skills



Eight 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!

Eight focused rounds for sharper Smarter Balanced math thinking

This book gives you eight 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

An eight-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?

Eight Smarter Balanced tests, 320 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 7–8	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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& answers

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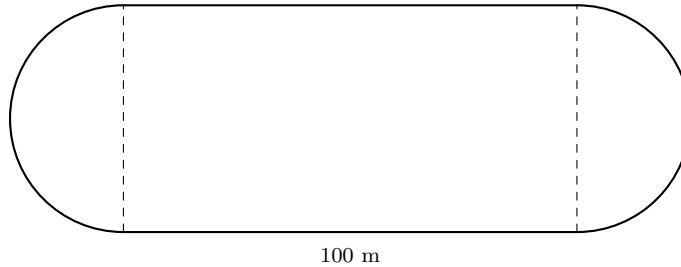
★ Practice Test 1	_____	15
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- 1) A cube has an edge length of 5 cm. What is its total surface area?
- ☐ A. 25 cm^2 ☐ C. 125 cm^2
☐ B. 75 cm^2 ☐ D. 150 cm^2
- 2) A data analyst fits two different trend lines to a scatter plot. Line A has MAD (mean absolute deviation of residuals) = 0.3, while Line B has MAD = 0.8. Which conclusion is justified?
- ☐ A. Line B is better because it has a higher MAD ☐ C. Both lines are equally good
☐ B. Line A is better because residuals are closer to zero ☐ D. We cannot compare lines using MAD alone
- 3) Three angles at a point on a straight line measure 38° , 71° , and z . Find the value of z .
- ☐ A. 71° ☐ C. 119°
☐ B. 109° ☐ D. 142°
- 4) A student confuses a pyramid with a cone. A pyramid has a square base with side 6 m and height 8 m. What is the correct volume?
- ☐ A. 48 m^3 ☐ C. 192 m^3
☐ B. 96 m^3 ☐ D. 288 m^3



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- 5) A running track is composed of a rectangle (100 m by 50 m) with two semicircles on the short ends (diameter 50 m each). Find the total perimeter of the track.



- ☐ A. 300 m ☐ C. 378.5 m
☐ B. 357 m ☐ D. 400 m
- 6) A data set has $MAD = 0$. What must be true about the data?
- ☐ A. All values are zero ☐ C. There is exactly one value
☐ B. The mean is zero ☐ D. All values are identical
- 7) A student has a 0.8 probability of passing math and 0.7 probability of passing English. If these are independent, what is the probability of passing both?
- ☐ A. 0.56 ☐ C. 0.75
☐ B. 1.5 ☐ D. 0.80
- 8) A student arranges 5 cards in a line. The first card can be any of the 5. The second can be any of the remaining, and so on. How many different arrangements are possible?
- ☐ A. $5^5 = 3,125$ ☐ C. $5 \times 4 \times 3 \times 2 \times 1 = 120$
☐ B. $5 + 4 + 3 + 2 + 1 = 15$ ☐ D. $\binom{5}{5} = 1$



9) Which value is irrational?

☐ A. $0.5 + 0.25$

☐ B. $\frac{1}{2} + \frac{1}{3}$

☐ C. $\sqrt{10} + 1$

☐ D. 2^2

10) Trapezoid MNOP has parallel sides of 8 cm and 14 cm. If trapezoid MNOP is congruent to trapezoid QRST, and side $QR = 8$ cm, find the length of the side that corresponds to the 14 cm side of MNOP.

11) What is $0.\overline{111}$ as a fraction?

☐ A. $\frac{1}{111}$

☐ B. $\frac{111}{100}$

☐ C. $\frac{111}{1000}$

☐ D. $\frac{111}{999} = \frac{1}{9}$

12) A triangle has angles measuring 36° , 54° , and x° . Find the value of x .

13) A researcher finds that shoe size and height have a strong positive correlation. Can she conclude that bigger shoes cause people to grow taller? Explain why or why not.



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1) Which decimal representation indicates an irrational number?

- ☐ A. 0.875 ☐ D. 2.718281828... (non-repeating,
☐ B. 0.123123123... (repeating pattern) non-terminating)
☐ C. $0.5\overline{3}$ (where 3 repeats)

2) A line passes through $(2, 10)$ and has slope 3. What is the y -intercept?

- ☐ A. 3 ☐ C. 10
☐ B. 4 ☐ D. 6

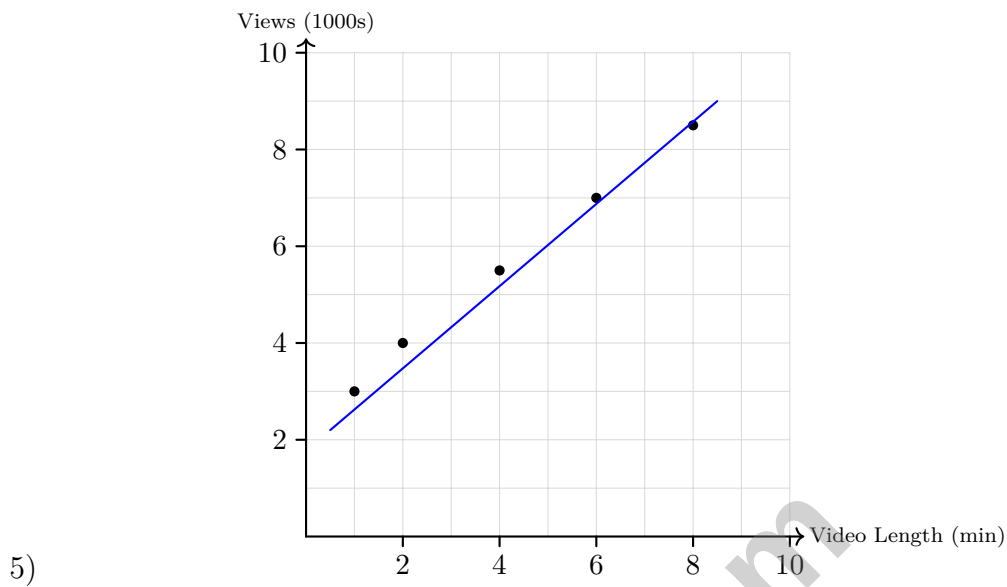
3) $S_1(w) = 20w$ and S_2 at $(0, 50)$, $(1, 56)$. After 4 weeks, which has more?

- ☐ A. S_1 ☐ C. Both same.
☐ B. S_2 ☐ D. Cannot be determined.

4) In triangle ABC , angle $A = (2m+5)^\circ$, angle $B = (3m-10)^\circ$, and angle $C = (m+35)^\circ$. Find angle A .

- ☐ A. 45° ☐ C. 65°
☐ B. 55° ☐ D. 75°





A content creator analyzes video length versus view count. Using the trend line, by how much do views increase per minute of video length?

- ☐ A. Approximately 0.8 thousand views/min
- ☐ B. Approximately 1.1 thousand views/min
- ☐ C. Approximately 1.5 thousand views/min
- ☐ D. Approximately 2 thousand views/min



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1) Which best approximates $\sqrt[3]{50}$?

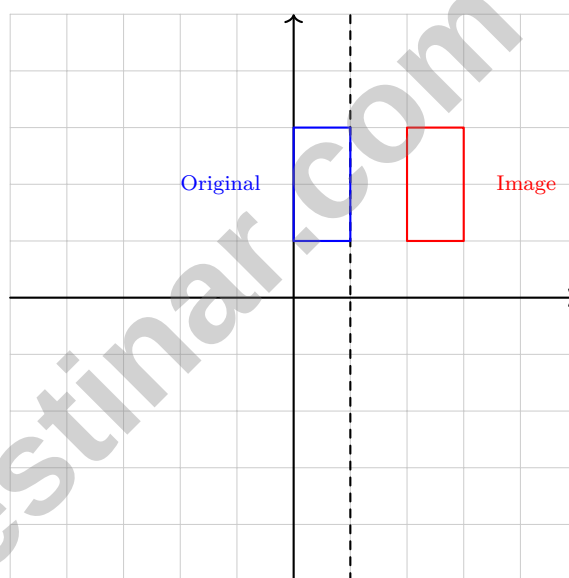
☐ A. 3.5

☐ C. 4.2

☐ B. 2.9

☐ D. 3.7

2) If $3^a \cdot 3^5 = 3^{12}$, what is the value of a ?



3)

The figure shows a reflection across the dashed line $x = 1$. If a point on the original was at $(0, 2)$, where is it in the image?

☐ A. $(1, 2)$

☐ C. $(0, 2)$

☐ B. $(2, 2)$

☐ D. $(3, 2)$



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4) For the inequality $y < -2x + 5$, which statement about the boundary line is true?

- ☐ A. The boundary line is solid
☐ B. The boundary line is dashed
☐ C. The boundary line is vertical
☐ D. The boundary line is horizontal

5) What is the y -intercept of the line $y = 3x - 7$?

- ☐ A. -7
☐ B. 3
☐ C. 7
☐ D. -3

6) Solve: $-3(x - 2) \leq 9$

- ☐ A. $x \leq -1$
☐ B. $x \leq 1$
☐ C. $x \geq -1$
☐ D. $x \geq 1$

7) Expand $(x - 3)^2$.

- ☐ A. $x^2 - 6x + 9$
☐ B. $x^2 - 9$
☐ C. $x^2 + 6x + 9$
☐ D. $x^2 - 6x - 9$

8) Using the equation $y = 3x - 5$, complete the table:

x	0	2	5
y	?	?	?

What is the sum of the three y values?

- ☐ A. 6
☐ B. 15
☐ C. 20
☐ D. 25



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.G.C.9) A cube has 6 equal square faces, each with area $5 \times 5 = 25 \text{ cm}^2$. Total surface area $= 6 \times 25 = 150 \text{ cm}^2$.
- 2) **Choice B is correct.** (8.SP.A.2) A lower MAD indicates smaller residuals overall, meaning the trend line passes closer to the data points.
- 3) **Choice A is correct.** (8.G.B.7) Angles on a straight line sum to 180° . So $z = 180 - 38 - 71 = 71^\circ$.
- 4) **Choice B is correct.** (8.G.C.9) Pyramid volume: $V = \frac{1}{3} \times 36 \times 8 = 96 \text{ m}^3$. (A cone with the same base and height would also be $\frac{1}{3}\pi r^2 h$, but this is a pyramid.)
- 5) **Choice B is correct.** (8.G.B.7) Decompose the perimeter: two long sides of rectangle plus two semicircles (which form one complete circle). Long sides: $100 + 100 = 200 \text{ m}$. Circle circumference: $\pi d = 3.14 \times 50 \approx 157 \text{ m}$. Total $= 200 + 157 = 357 \text{ m}$.
- 6) **Choice D is correct.** (8.G.B.8) If $\text{MAD} = 0$, every value must equal the mean exactly, which happens only when all values are the same.
- 7) **Choice A is correct.** (8.G.B.7) $P(\text{both}) = 0.8 \times 0.7 = 0.56$.
- 8) **Choice C is correct.** (8.EE.C.7b) Arrange all 5 cards in sequence: $5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$ arrangements.
- 9) **Choice C is correct.** (8.NS.A.1) The sum of an irrational number ($\sqrt{10}$) and a rational number (1) is always irrational. So $\sqrt{10} + 1$ is irrational. The others are rational: $0.5 + 0.25 = 0.75$, $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$, and $2^2 = 4$.
- 10) **The correct answer is 14.** (8.G.A.2) Since the trapezoids are congruent and $QR = 8 \text{ cm}$ corresponds to one of the parallel sides of MNOP, the other parallel side of QRST must also be 14 cm.
- 11) **Choice D is correct.** (8.NS.A.1) Let $x = 0.\overline{111}$. Then $1000x = 111.\overline{111}$. Subtracting: $999x = 111$, so $x = \frac{111}{999} = \frac{1}{9}$.
- 12) **The correct answer is 90.** (8.G.A.5) $180 - 36 - 54 = 90^\circ$.
- 13) **The correct answer is no.** (8.SP.A.1) Correlation shows two variables move together, but does not prove that one causes the other. Many variables may have a common cause (in this case, overall body growth).
- 14) **Choice D is correct.** (8.NS.A.2) A is all integers (rational). B contains perfect square roots (rational). C is mixed. D contains $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, all irrational.
- 15) **Choice C is correct.** (8.NS.A.2) $\pi \approx 3.14159\dots$, commonly estimated as 3.14 or 3.2 for Grade 8 work. Distractors: A (underestimate), B (rounds down), D (rounds up).
- 16) **Choice D is correct.** (8.EE.A.3) 10^{24} is 1 septillion (each set of 3 powers of 10 adds one step up: million, billion, trillion, etc.).
- 17) **Choice A is correct.** (8.EE.C.7) Base fee is \$50, hourly rate is \$40 per hour, total is \$170. Equation: $50 + 40h = 170$. Solving: $40h = 120 \Rightarrow h = 3$ hours.
- 18) **The correct answer is A,C.** (8.F.A.2) A is correct because the coefficient of x is $\frac{2}{3}$. C is correct because $\frac{9-5}{3-1} = 2$. B has slope $\frac{2}{3}$, D has slope $\frac{4}{5}$, and E has slope 2, so those statements are false.
- 19) **Choice D is correct.** (8.G.B.7) Interest: $I = 25000 \times 0.06 \times 5 = \$7,500$. Total: $25000 + 7500 = \$32,500$.
- 20) **Choice D is correct.** (8.EE.A.1) (D) is $x^6 + 1$, not x^6 , because addition is not an exponent law.
- 21) **Choice C is correct.** (8.EE.B.6) Perpendicular slopes are negative reciprocals. The negative reciprocal of $\frac{3}{4}$ is $-\frac{4}{3}$.
- 22) **Choice C is correct.** (8.EE.C.8b) Multiply by 5: $x - 2 \leq 15$. Add 2: $x \leq 17$.
- 23) **Choice B is correct.** (8.F.B.5) From $x = -1$ to $x = 2$, the graph moves downward from 2 to -1 . The other listed intervals are flat or increasing.
- 24) **Choice A is correct.** (8.G.A.5) The sum for a regular octagon is $(8 - 2) \times 180 = 1080^\circ$. Each angle is $\frac{1080}{8} = 135^\circ$.
- 25) **Choice D is correct.** (8.EE.A.2) $4 \times 4 \times 4 = 64$, so $\sqrt[3]{64} = 4$.
- 26) **Choice D is correct.** (8.EE.A.4) Divide coefficients: $8 \div 2 = 4$. Subtract exponents: $10^{8-3} = 10^5$. Result: 4×10^5 .
- 27) **Choice C is correct.** (8.EE.B.5) Slope $= \frac{2}{7} \approx 0.286 \approx 0.29$. This is a shallow line (slope less than 1).
- 28) **Choice A is correct.** (8.EE.C.8a) Parallel lines have the same slope but different y -intercepts. Both lines shown have slope 1 but intercepts 1 and 3.



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The Power of Showing Work

Hi, Organized Solver!

◇ You practiced Grade 8 skills that often require more than one step. That means your written work matters. ◇

★ **Remember this:** Showing work is not extra. It is how you track your thinking, find errors, and prove that your answer did not happen by luck. You practiced across 8 full Grade 8 practice tests, and that repeated effort matters. ★

Organized Work Habits

- **One Line Per Step:** Keep the path readable.
- **Box the Answer:** Make the final result easy to find.
- **Use Labels:** Tell what each value represents.
- **Check the Path:** Follow your steps backward if needed.

Grade 8 test-day tip: When a problem has several steps, write less on each line. Space makes checking easier.

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

Jay Daie

Your Organized-Work Coach

PRACTICE TODAY, SUCCEED TOMORROW!

Give your child the confidence and skills they need with **8 full-length Grade 8** Math practice tests that mirror 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.



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!



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Better Results.