

Delaware

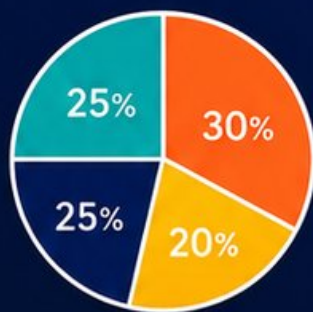
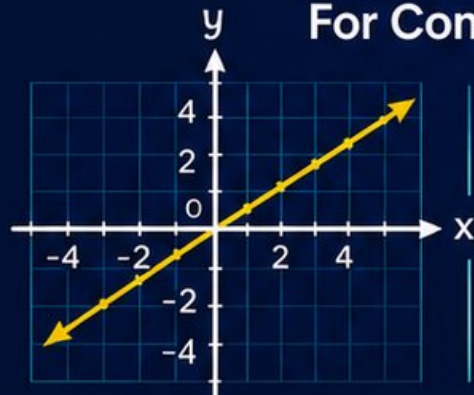
Smarter Balanced

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

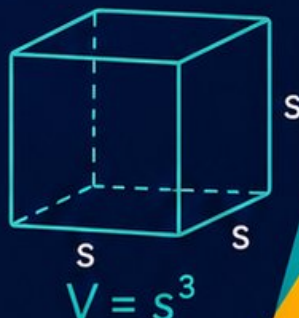


$$y = mx + b$$

$$2x - 3y = 6$$

$$\sqrt{x^2 + y^2}$$

$$A = bh$$



4 PRINTED TESTS



2 ONLINE TESTS

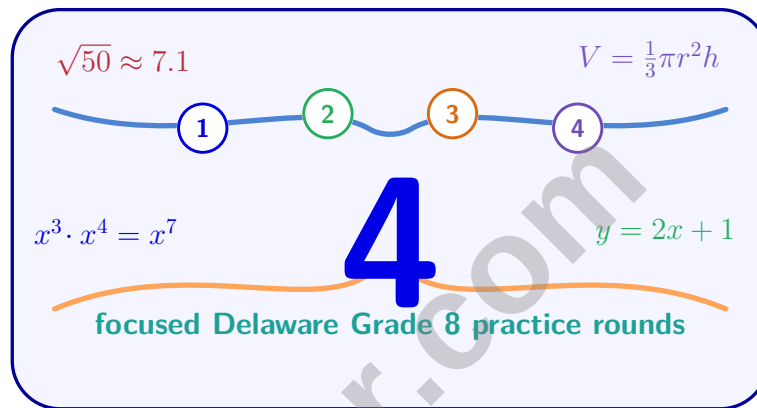


Use these **two additional online practice tests** for extra review after the printed tests in this book.



4 Delaware Smarter Balanced Grade 8 Math Practice Tests

Four Grade 8 Smarter Balanced Rounds with Keys, Review, and Explanations



Four 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!

Four focused rounds for sharper Smarter Balanced math thinking

This book gives you four 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 four-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?

Four Smarter Balanced tests, 160 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–4	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

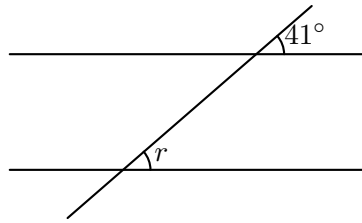
The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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For more practice
& answers

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1)

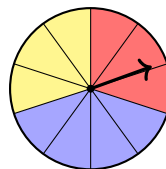
Two parallel lines are cut by a transversal. The angle below is r and the angle above is 41° . If they are corresponding angles, what is r ?

☐ A. 41° ☐ C. 139° ☐ B. 49° ☐ D. 149° 2) Points $(-1, 5)$ and $(2, 14)$ lie on a line. Find the slope.

3) A coffee shop has fixed costs of \$400 per day and variable costs of \$2 per cup sold. If cups sell for \$5 each, about how many cups must be sold to break even?

☐ A. 100 cups☐ C. 134 cups☐ B. 120 cups☐ D. 160 cups

4) A spinner has 10 equal sections: 3 red, 4 blue, and 3 yellow. What is the probability of landing on red OR blue?



3 red, 4 blue, 3 yellow

☐ A. $\frac{4}{10}$ ☐ C. $\frac{7}{10}$ ☐ B. $\frac{12}{10}$ ☐ D. $\frac{3}{10}$ 

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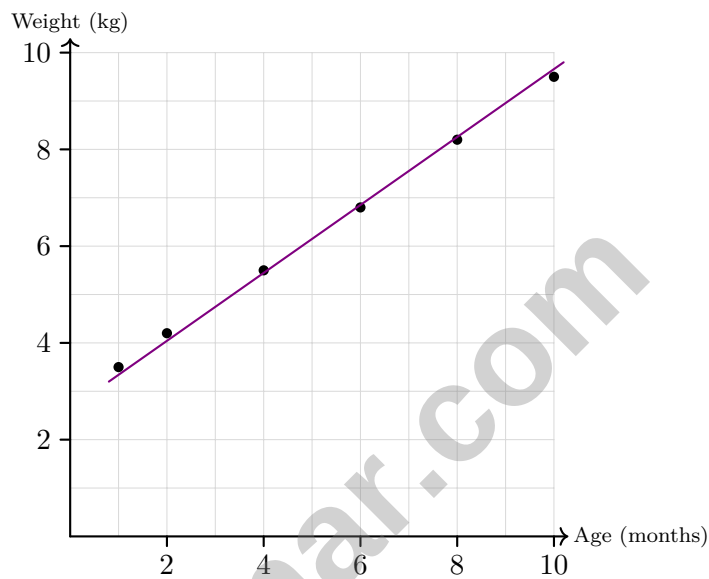
5) A school fundraiser sells boxes with: 3 types of candy, 2 sizes, and 4 designs. How many different box variations are possible?

☐ A. $3 + 2 + 4 = 9$

☐ C. $(3 \times 2) + 4 = 10$

☐ B. $3 \times 2 \times 4 = 24$

☐ D. $3 \times 2 + 4 = 10$



6)

An infant growth chart plots age in months versus weight in kg. If the trend line is $y = 0.65x + 2.5$, how much weight gain is predicted per month?

☐ A. 0.65 kg per month

☐ C. 2.5 kg per month

☐ B. 0.50 kg per month

☐ D. 3.15 kg per month

7) Triangle ABC is similar to Triangle DEF . Side $AB = 4$ cm, $BC = 5$ cm, $CA = 6$ cm. The perimeter of DEF is 45 cm. Find the length of EF .

☐ A. 15 cm

☐ C. 22.5 cm

☐ B. 18 cm

☐ D. 10 cm



8) If $f(x) = |x - 2|$, what is $f(5)$?

☐ A. 3

☐ C. 7

☐ B. -3

☐ D. -7

Numbers

Rational

$\frac{1}{2}$, 0.5

Irrational

$\sqrt{2}$, π

9)

Which number should be placed in the Rational section?

☐ A. $\sqrt{13}$

☐ C. $-\frac{9}{2}$

☐ B. $2 + \sqrt{5}$

☐ D. $\sqrt{\pi}$

10) In a function, how many outputs can each input have?

11) Two students claim different answers for $0.\overline{9}$. Student A says $\frac{9}{9} = 1$. Student B says $\frac{9}{10}$. Who is correct and why?

☐ A. Student A is correct; $0.\overline{9} = 1$.

☐ C. Both are incorrect; the answer is $\frac{8}{9}$.

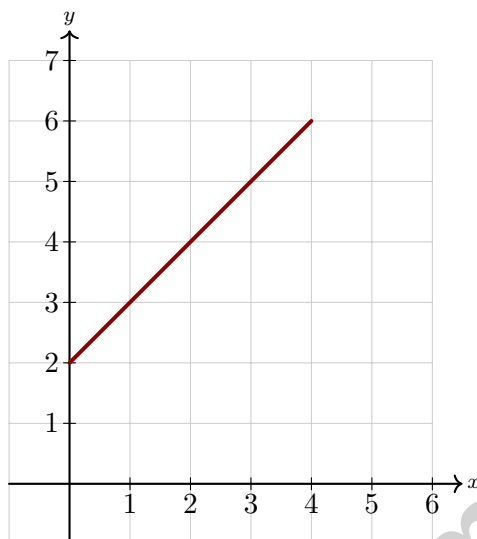
☐ B. Student B is correct; $0.\overline{9} = 0.9$.

☐ D. They are equal, so both are correct.



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1)

What is the y -intercept of the line shown?

☐ A. 1☐ C. 3☐ B. 4☐ D. 2

2) A cell phone plan costs \$20 per month plus \$0.10 per text message. If cost is graphed against number of texts sent (x -axis texts, y -axis cost in \$), what is the slope?

☐ A. \$20 per text☐ C. 20 texts per dollar☐ B. \$20.10 per text☐ D. \$0.10 per text

3) A concert venue sells adult tickets for \$15 and student tickets for \$8. If 120 total tickets were sold for \$1,520, how many student tickets were sold?

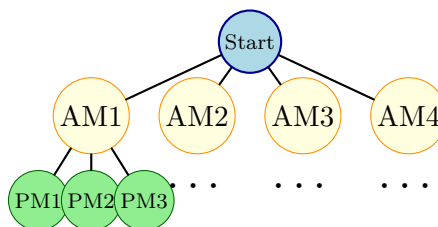
☐ A. 40☐ C. 80☐ B. 60☐ D. 100

- 4) A transversal cuts two parallel lines. One of the eight angles formed is 157° . How many of the eight angles measure 157° ?
- ☐ A. 1 ☐ C. 4
☐ B. 2 ☐ D. 8
- 5) Data: $\{5, 5, 5, 5, 5\}$. What is the MAD?
- ☐ A. 0 ☐ C. 5
☐ B. 1 ☐ D. 25
- 6) Triangle XYZ has angle measures of $45^\circ, 60^\circ, 75^\circ$. Triangle ABC is congruent to triangle XYZ. What are the angle measures of triangle ABC?
- ☐ A. $30^\circ, 60^\circ, 90^\circ$ ☐ C. $50^\circ, 65^\circ, 65^\circ$
☐ B. $45^\circ, 60^\circ, 75^\circ$ ☐ D. $40^\circ, 60^\circ, 80^\circ$
- 7) A bag has 9 cards: 4 red, 3 blue, 2 green. Three cards are drawn without replacement. What is the probability that all three are red?
- ☐ A. $\frac{4}{9}$ ☐ C. $\frac{12}{504}$
☐ B. $\frac{24}{504}$ ☐ D. $\frac{64}{729}$
- 8) A schedule allows you to pick a morning activity and an afternoon activity from the list below. Morning: hiking or swimming. Afternoon: painting, music, or reading. How many different schedules are possible?
- ☐ A. $2 + 3 = 5$ ☐ C. $3^2 = 9$
☐ B. $2 \times 3 = 6$ ☐ D. $(2 + 3)^2 = 25$



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& answers

- 1) A student chooses a morning task (4 options) and an afternoon task (3 options). A partial tree diagram is drawn. How many final outcome branches are there?



- ☐ A. $4 + 3 = 7$
☐ C. $4^3 = 64$
- ☐ B. $4 \times 3 = 12$
☐ D. $3^4 = 81$
- 2) What is $\sqrt[3]{729}$?
- ☐ A. 8
 ☐ C. 10
- ☐ B. 11
 ☐ D. 9
- 3) Which of the following is guaranteed to be a function?
- ☐ A. Any curve in the coordinate plane.
 ☐ C. Any set of points that passes the vertical line test.
- ☐ B. Any set of points that is symmetric about the y -axis.
 ☐ D. Any set of points with five or fewer ordered pairs.
- 4) A linear equation shows the relationship between time spent studying (x , hours) and test score (y , points): $y = 5x + 60$. What is the slope, and what does it represent?
- ☐ A. Slope is 5; for each additional hour of study, the test score increases by 5 points
 ☐ C. Slope is $5x$; score changes with study time
- ☐ B. Slope is 60; the starting test score is 60 points
 ☐ D. Slope is 60; for each additional hour, the score increases by 60 points



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& answers

- 5) A register contains pennies, nickels, and dimes. There are twice as many nickels as pennies, and twice as many dimes as nickels. If there are 70 coins total, how many pennies are there?

☐ A. 5☐ C. 10☐ B. 8☐ D. 12

- 6) If $f(x) = \frac{2x+5}{3}$, what is $f(4)$?

☐ A. 3☐ C. $\frac{26}{3}$ ☐ B. 4☐ D. $\frac{13}{3}$

- 7) Point P is translated 6 units left and 8 units up to form point P'. If P is at $(3, -2)$, what are the coordinates of P'?

☐ A. $(-3, 6)$ ☐ C. $(-3, -10)$ ☐ B. $(9, 6)$ ☐ D. $(9, -10)$

- 8) Two parallel lines are cut by a transversal. If one angle is 135° , how many angles of 45° are formed?

☐ A. 2☐ C. 6☐ B. 4☐ D. 8

- 9) A parking meter charges \$2.50 initial fee plus \$0.75 per hour. What is the hourly rate?



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.G.B.7) Corresponding angles are congruent. So $r = 41^\circ$.
- 2) **The correct answer is 3.** (8.EE.B.5) Slope = $\frac{14-5}{2-(-1)} = \frac{9}{3} = 3$.
- 3) **Choice C is correct.** (8.EE.C.8c) Let n = cups sold. Cost is $400 + 2n$ and revenue is $5n$. Break-even occurs when $5n = 400 + 2n$, so $3n = 400$ and $n = 133\frac{1}{3}$. The shop must sell about 134 cups to cover the cost.
- 4) **Choice C is correct.** (8.G.B.7) $P(\text{red or blue}) = P(\text{red}) + P(\text{blue}) = \frac{3}{10} + \frac{4}{10} = \frac{7}{10}$.
- 5) **Choice B is correct.** (8.EE.C.7b) Apply the Counting Principle to all three independent factors: $3 \times 2 \times 4 = 24$ different variations.
- 6) **Choice A is correct.** (8.SP.A.2) The slope of the line $y = 0.65x + 2.5$ is 0.65, representing the predicted weight gain per month.
- 7) **Choice A is correct.** (8.G.A.4) Perimeter of ABC is $4 + 5 + 6 = 15$ cm. Scale factor is $\frac{45}{15} = 3$. The side corresponding to $BC = 5$ is $EF = 5 \times 3 = 15$ cm.
- 8) **Choice A is correct.** (8.F.A.1) Substitute $x = 5$: $f(5) = |5 - 2| = |3| = 3$.
- 9) **Choice C is correct.** (8.NS.A.1) Only $-\frac{9}{2}$ is rational (a fraction of two integers). The others are irrational: $\sqrt{13}$ is a non-perfect-square root, $2 + \sqrt{5}$ is a sum involving an irrational, and $\sqrt{\pi}$ is the root of an irrational.
- 10) **The correct answer is 1.** (8.F.A.1) A relation is a function when each input has exactly one output.
- 11) **Choice A is correct.** (8.NS.A.1) Let $x = 0.\bar{9}$. Then $10x = 9.\bar{9}$. Subtracting: $9x = 9$, so $x = 1$. Student A is correct.
- 12) **Choice D is correct.** (8.NS.A.2) By Pythagorean theorem: $c = \sqrt{3^2 + 5^2} = \sqrt{34}$. Since $5^2 = 25$ and $6^2 = 36$, and $25 < 34 < 36$, we have $5 < \sqrt{34} < 6$.
- 13) **Choice C is correct.** (8.NS.A.2) $\sqrt{18} = 3\sqrt{2} \approx 3 \times 1.41 = 4.23$.
- 14) **Choice D is correct.** (8.EE.A.3) Move the decimal 2 places left: $8.2 \times 10^{-2} = 0.082$.
- 15) **Choice B is correct.** (8.G.C.9) Base area = $4^2 = 16$ cm². Four triangular faces each have area $\frac{1}{2}(4)(6) = 12$ cm², so the lateral area is 48 cm². Total surface area = $16 + 48 = 64$ cm².
- 16) **Choice B is correct.** (8.G.A.1) Shape A has a corner at $(-2, 1)$ and shape B has a corresponding corner at $(2, 1)$. The horizontal shift is $2 - (-2) = 4$ units.
- 17) **Choice D is correct.** (8.EE.C.7) A: Identity (infinitely many). B: Subtract $3x$: $4 = 7$ (false, no solution). C and D: Unique solutions.
- 18) **Choice A is correct.** (8.EE.C.8b) Subtract $2x$: $2x + 1 > 9$. Subtract 1: $2x > 8$. Divide by 2: $x > 4$.
- 19) **Choice A is correct.** (8.EE.C.8b) The strict inequality $<$ uses a DASHED line. Since $y <$ the expression, shade BELOW.
- 20) **Choice B is correct.** (8.G.C.9) Sphere: $V_s = \frac{4}{3}\pi r^3$. Cylinder: $V_c = \pi r^2(2r) = 2\pi r^3$. Ratio: $\frac{V_c}{V_s} = \frac{2\pi r^3}{\frac{4}{3}\pi r^3} = \frac{2 \times 3}{4} = 1.5$.
- 21) **Choice A is correct.** (8.SP.A.3) The slope (0.25) represents the rate of change: for every 1 GB used, cost increases by \$0.25.
- 22) **The correct answer is A,B.** (8.EE.A.2) $81 = 9^2$ and $100 = 10^2$, so both are perfect squares. The other choices are not perfect squares or perfect cubes.
- 23) **Choice D is correct.** (8.G.B.7) Interest: $I = 4000 \times 0.03 \times 3 = \360 . Final: $4000 + 360 = \$4,360$.
- 24) **Choice D is correct.** (8.EE.A.1) Add exponents: $n^6 \cdot n^{-4} \cdot n^3 = n^{6-4+3} = n^5$.
- 25) **Choice C is correct.** (8.EE.A.4) Divide: $\frac{9 \times 10^{-6}}{3 \times 10^{-8}} = \frac{9}{3} \times 10^{-6-(-8)} = 3 \times 10^2$.
- 26) **Choice C is correct.** (8.EE.B.5) Slope $k = \frac{8}{3}$. Equation: $y = \frac{8}{3}x$. At $x = 6$: $y = \frac{8}{3}(6) = 16$.
- 27) **Choice D is correct.** (8.EE.B.6) The given line has slope 4, so the perpendicular slope is $-\frac{1}{4}$. With $b = -2$, the equation is $y = -\frac{1}{4}x - 2$.
- 28) **Choice C is correct.** (8.EE.C.8a) Both equations have slope 2. If $c \neq 3$, the lines are parallel and have no solution. If $c = 3$, the equations are identical and there are infinitely many solutions.



Hi, Thoughtful Reader!

◇ A strong Grade 8 test taker is also a strong reader. You practiced turning words, tables, graphs, and diagrams into math decisions. ◇

★ **Remember this:** That skill grows each time you slow down enough to ask what the problem is really telling you and what it is really asking for. This version gave you 4 opportunities to rehearse test-day habits. ★

Reader-to-Solver Skills

- **Circle the Ask:** Make the target visible.
- **Sort Information:** Separate useful facts from extra words.
- **Match Units:** Keep quantities connected.
- **Answer Fully:** Include the value and what it means.

Grade 8 test-day tip: After solving, reread only the final question. Make sure your answer matches it exactly.

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

Jay Daie

Your Reading-and-Math Helper

PRACTICE TODAY, ACHIEVE TOMORROW!

Give your child the confidence and skills they need with **4 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!

4



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
- ✓ 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!



4 PRINTED TESTS



2 ONLINE TESTS



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