

8

Pennsylvania

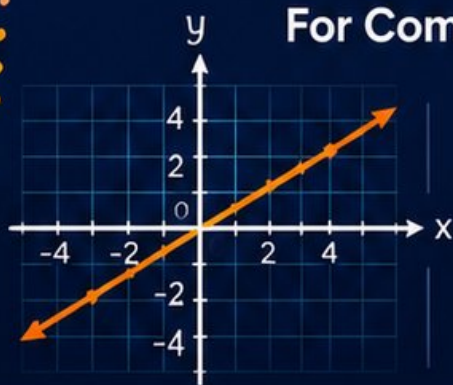
PSSA

GRADE 8

MATH

PRACTICE TESTS

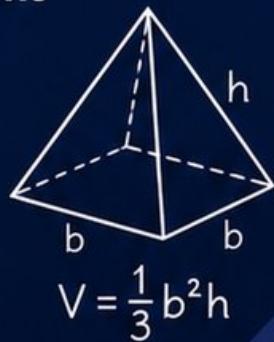
Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$A = \pi r^2$$

$$C = 2\pi r$$

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



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



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PRINTED TESTS

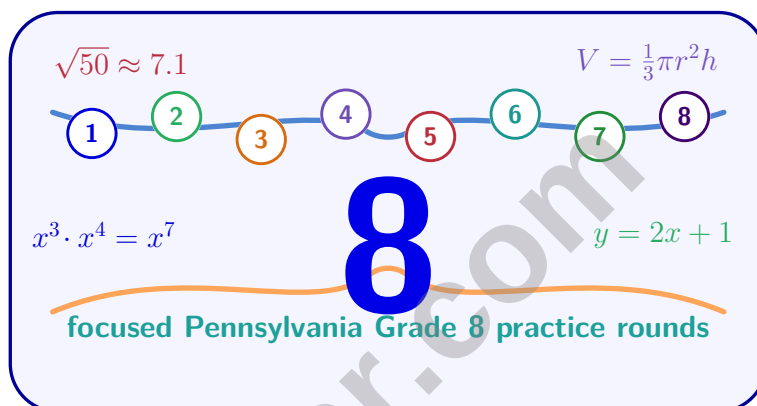
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ONLINE TESTS

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

8 Pennsylvania PSSA Grade 8 Math Practice Tests

Pennsylvania Practice for Functions, Geometry, and Linear Models



Eight complete 40-question Grade 8 PSSA 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, Pennsylvania Grade 8 Problem Solver!

Eight focused rounds for sharper PSSA math thinking

This book gives you eight full Grade 8 PSSA 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 Pennsylvania 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.

Pennsylvania 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 PSSA 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.

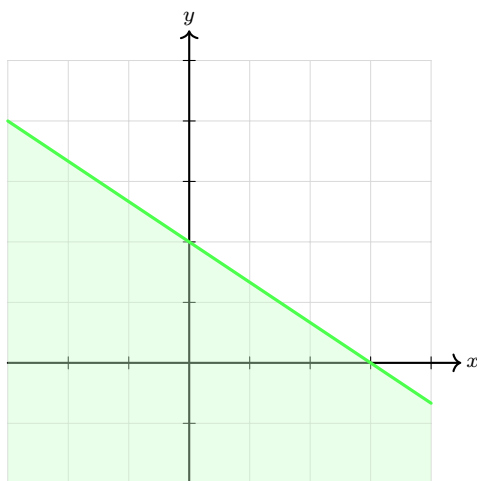
The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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& answers

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1)

What is the inequality?

☐ A. $y > -\frac{2}{3}x + 2$

☐ B. $y < -\frac{2}{3}x + 2$

☐ C. $y \geq -\frac{2}{3}x + 2$

☐ D. $y \leq -\frac{2}{3}x + 2$



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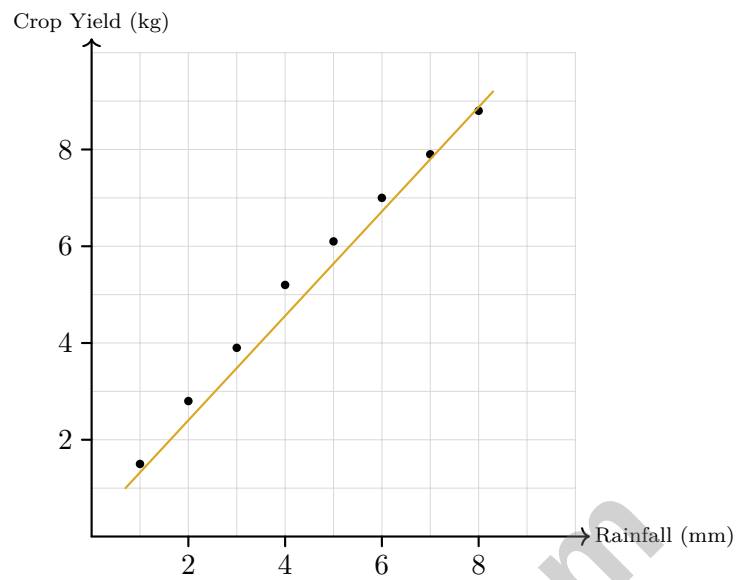
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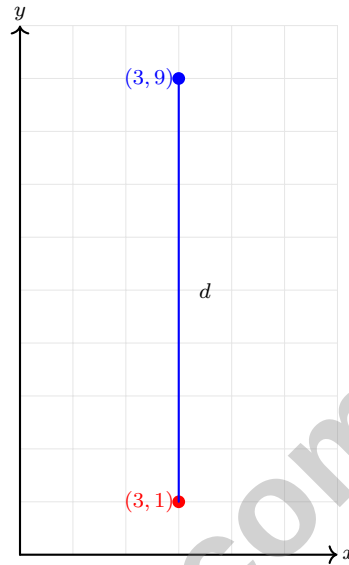
2)

In a study of rainfall and crop yield, the trend line shows a positive relationship. How much would yield increase for every 1 mm increase in rainfall?

- ☐ A. Between 1 and 2 kg ☐ C. Between 2 and 3 kg
☐ B. Less than 1 kg ☐ D. More than 3 kg

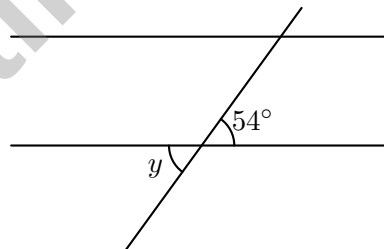


- 3) A coordinate plane shows two points: $(3, 1)$ and $(3, 9)$. What is the distance between them?



- ☐ A. 8
☐ B. 6

- ☐ C. $\sqrt{63}$
☐ D. 12



4)

Two parallel lines are cut by a transversal. Angles y and 54° are vertical angles at the intersection. What is y ?

- ☐ A. 36°
☐ B. 54°

- ☐ C. 126°
☐ D. 180°



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- 1) A rectangular path (outer dimensions 20 m by 10 m, inner rectangle 16 m by 6 m) forms a frame. What is the area of the path only?



- ☐ A. 56 m^2
☐ C. 96 m^2
☐ B. 76 m^2
☐ D. 104 m^2
- 2) The area model below represents $(x + 2)(x + 4)$:

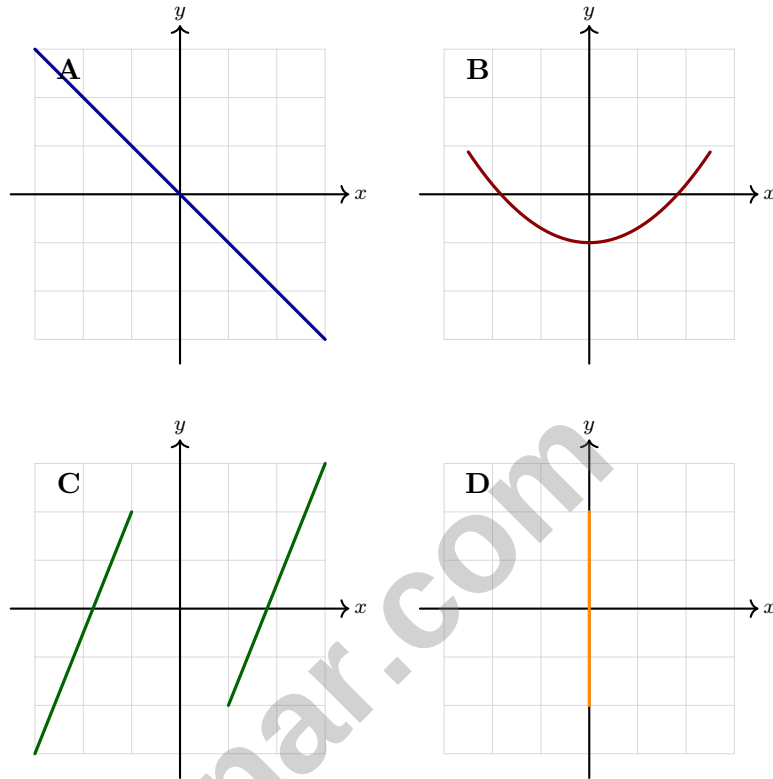
	x	2
x	x^2	$2x$
4	$4x$	8

What is the total area?

- ☐ A. $x^2 + 6x + 8$
☐ C. $x^2 + 4x + 2$
☐ B. $x^2 + 8$
☐ D. $2x^2 + 6x + 8$
- 3) A chemist combines a 25% salt solution with an 80% salt solution to make 100 mL of a 50% solution. How many mL of the 25% solution are used?



4) Which graph shows a single linear function?



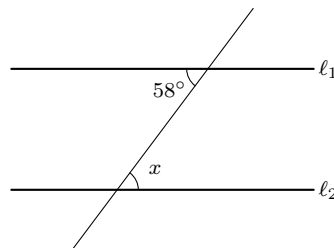
☐ A. Graph A (diagonal line).

☐ B. Graph B (parabola).

☐ C. Graph C (two disconnected segments).

☐ D. Graph D (vertical line segment).

5) In the diagram, lines ℓ_1 and ℓ_2 are parallel. Find the measure of angle x .



☐ A. 58°

☐ B. 68°

☐ C. 122°

☐ D. 180°

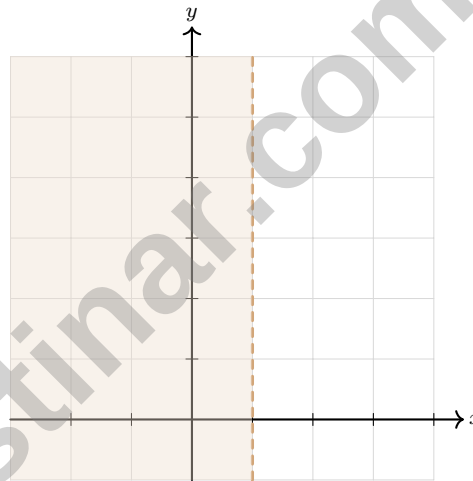


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1) If $n(x) = \begin{cases} x + 2 & \text{if } x < 1 \\ 5 & \text{if } 1 \leq x < 4, \\ x - 1 & \text{if } x \geq 4 \end{cases}$, what is $n(2)$?

☐ A. 4☐ C. 3☐ B. 5☐ D. 1

2) When a point is reflected across the y -axis, which coordinate(s) change?

☐ A. Only the x -coordinate☐ C. Both x and y change☐ B. Only the y -coordinate☐ D. Neither coordinate changes

3)

The graph shows which inequality?

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

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4) Solve for x : $\frac{x}{4} - 2 = 3$

☐ A. $x = 4$

☐ C. $x = 12$

☐ B. $x = 8$

☐ D. $x = 20$

5) A company allows workers to earn \$12 per hour plus a \$50 bonus. How many hours must they work to earn at least \$170?

☐ A. $h < 10$

☐ C. $h \geq 10$

☐ B. $h > 10$

☐ D. $h \leq 10$

6) Missing value problem: Function through $(2, 9)$ and $(5, 24)$ has what equation?

☐ A. $y = 5x - 1$

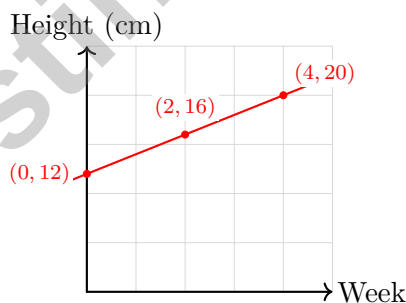
☐ C. $y = 3x + 3$

☐ B. $y = 5x + 1$

☐ D. $y = 6x - 3$

7) A plant grows according to the table:

Week	0	2	4
Height (cm)	12	16	20



What is the rate of change of the plant's height per week?

☐ A. 1 cm/week

☐ C. 4 cm/week

☐ B. 2 cm/week

☐ D. 12 cm/week



Pennsylvania PSSA 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 Pennsylvania PSSA practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice D is correct.** (CC.2.3.8.A.1) SOLID line and shading BELOW the negatively-sloped line indicate $y \leq -\frac{2}{3}x + 2$.
- 2) **Choice A is correct.** (CC.2.2.8.C.2) Slope $\approx \frac{9.2-1}{8.3-0.7} = \frac{8.2}{7.6} \approx 1.08$ kg/mm.
- 3) **Choice A is correct.** (CC.2.3.8.A.3) Since both points have the same x -coordinate, the distance is simply the difference in y -coordinates: $|9 - 1| = 8$.
- 4) **Choice B is correct.** (CC.2.3.8.A.2) Vertical angles are congruent. So $y = 54^\circ$.
- 5) **Choice B is correct.** (CC.2.3.8.A.1) $V = \frac{1}{3} \times 16 \times 3\sqrt{2} = 16\sqrt{2}$ cm³.
- 6) **Choice C is correct.** (CC.2.4.8.B.2) Dividing a cell by its row total is the definition of row-conditional frequency. The researcher either mislabeled their calculation or confused marginal (row total / grand total) with conditional (cell / row total).
- 7) **Choice B is correct.** (CC.2.4.8.B.2) Absolute deviations: $|20 - 27.5| = 7.5$, $|25 - 27.5| = 2.5$, $|30 - 27.5| = 2.5$, $|35 - 27.5| = 7.5$. Sum = 20. MAD = $20/4 = 5$.
- 8) **Choice C is correct.** (CC.2.3.8.A.2) Apply the Counting Principle: 10 appetizers $\times$ 5 sides $\times$ 6 desserts = 300 different meals.
- 9) **The correct answer is 14.** (CC.2.4.8.B.2) Substitute $x = 5$ into the function: $y = 3(5) - 1 = 15 - 1 = 14$.
- 10) **Choice C is correct.** (CC.2.1.8.E.4) (A) $0.\bar{5} = \frac{5}{9} \approx 0.556$, so it is greater than $\frac{5}{10}$, not less. (B) $0.\bar{9} = 1$, not < 1 . (C) $0.\bar{3} = \frac{1}{3}$ is correct. (D) $0.\bar{4} = \frac{4}{9}$, not $< \frac{4}{9}$.
- 11) **Choice C is correct.** (CC.2.1.8.E.4) A: $3 \times 2 = 6$ (rational). B: $\sqrt{16} = 4$ (rational). C: $2\sqrt{3}$ is irrational. D: $4 \times 5 = 20$ (rational).
- 12) **Choice D is correct.** (CC.2.1.8.E.1) $\sqrt{7} \approx 2.646$, so $2\sqrt{7} \approx 5.29$.
- 13) **Choice D is correct.** (CC.2.1.8.E.1) The sum of a rational and an irrational number is always irrational. For example, $2 + \sqrt{3}$ is irrational. Similarly, $b - a$ is irrational, but products can vary.
- 14) **Choice D is correct.** (CC.2.2.8.B.1) A negative exponent shifts the decimal to the left. Move the decimal 3 places left: $6.5 \times 10^{-3} = 0.0065$.
- 15) **The correct answer is 20.** (CC.2.3.8.A.2) Let s be the length of each equal side. The perimeter is $s + s + 16 = 56$, so $2s + 16 = 56$, which gives $2s = 40$ and $s = 20$ cm.
- 16) **Choice D is correct.** (CC.2.2.8.B.2) Using any two points: $\frac{7-3}{2-0} = \frac{4}{2} = 2$. Same slope for all pairs confirms collinearity.
- 17) **Choice D is correct.** (CC.2.2.8.B.1) $(k^2)^3 = k^6$; then $k^6 \cdot k^{-1} = k^5$; then $\frac{k^5}{k^5} = k^0 = 1$.
- 18) **Choice D is correct.** (CC.2.1.8.E.4) Divide coefficients: $3.6 \div 1.2 = 3$. Subtract exponents: $10^{6-2} = 10^4$. Result: 3×10^4 .
- 19) **Choice D is correct.** (CC.2.2.8.B.3) Distribute: $-2n + 8 = 10$. Subtract 8: $-2n = 2$. Divide by -2 : $n = -1$.
- 20) **Choice C is correct.** (CC.2.2.8.B.3) Solving $2x - 3 < 5$ gives $2x < 8$, so $x < 4$. Of the listed choices, only $x = 3$ satisfies the inequality.
- 21) **Choice A is correct.** (CC.2.2.8.C.2) One-time premium feature fee is \$8 (intercept). Monthly service cost is \$12 (slope). Total is $T = 12m + 8$.
- 22) **The correct answer is B,C.** (CC.2.2.8.B.3) $(x + 6)^2 = (x + 6)(x + 6) = x^2 + 12x + 36$. Choice B is the expanded form, and choice C is the factored form. Choice A ignores the middle term. Choice D has an error. Choice E is a different factorization that does not equal $(x + 6)^2$.
- 23) **Choice A is correct.** (CC.2.2.8.C.2) The scenario describes three distinct behaviors: rising speed (increasing), constant speed (flat), and decreasing speed (falling). This is a piecewise linear graph with three segments.
- 24) **Choice C is correct.** (CC.2.3.8.A.1) $A = 5000(1.06)^2 = 5000 \times 1.1236 = \$5,618$.
- 25) **Choice A is correct.** (CC.2.2.8.B.3) Check each: A is correct. B: $\sqrt{64} = 8 \neq 7$. C: $\sqrt{100} = 10 \neq 5$. D: $\sqrt[3]{64} = 4 \neq 8$.
- 26) **Choice D is correct.** (CC.2.4.8.B.1) A proportional equation is $y = kx$ (no constant term). Choice D has $+1$, so it's linear but not proportional.



Hi, Number Sense Builder!

◇ Grade 8 mathematics connects numbers, algebra, geometry, and data. It helps you model linear change, compare functions, estimate irrational values, measure distance, and explain patterns. ◇

★ **Remember this:** You practiced listening to that story. When the answer makes sense in the situation, your math becomes much stronger. This version gave you 8 opportunities to rehearse test-day habits. ★

Number Sense Checks

- **Too Big?:** Compare with an estimate.
- **Too Small?:** Use the context to judge.
- **Right Sign?:** Positive and negative values matter.
- **Right Unit?:** A number needs meaning.

Grade 8 test-day tip: Before choosing an answer, ask whether it fits the story of the problem.

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

Jay Daie

Your Number-Sense Friend

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.