

9

Pennsylvania

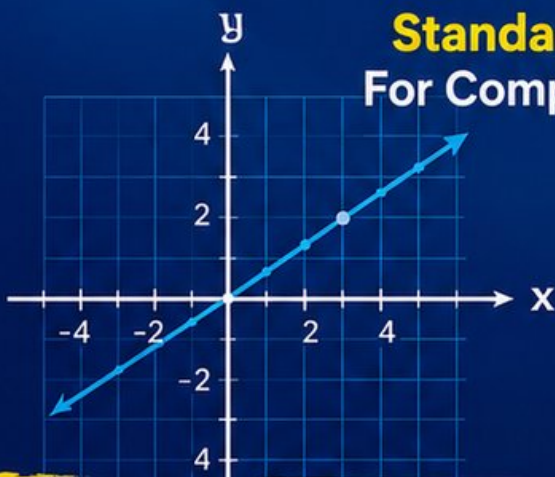
PSSA

Grade 8

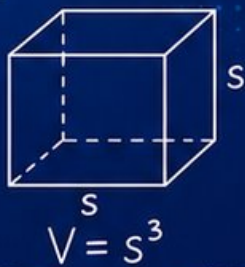
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



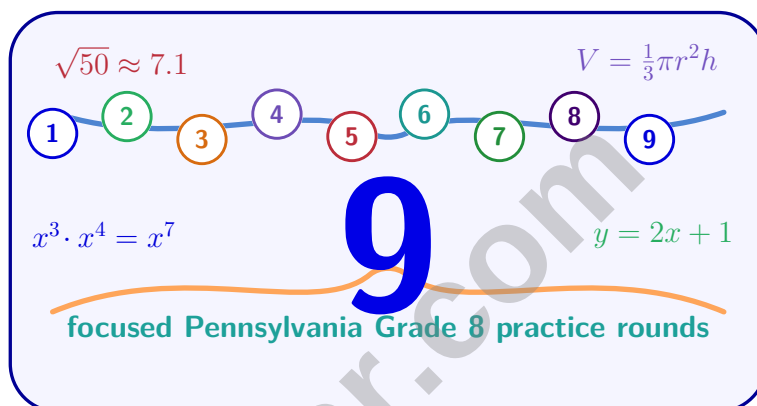
$$2x + 3y = 12$$
$$y = mx + b$$

**9** PRINTED TESTS**2** ONLINE TESTS

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

9 Pennsylvania PSSA Grade 8 Math Practice Tests

Clear Pennsylvania Review for Algebra, Geometry, Functions, Statistics, and Probability



Nine 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!

Nine focused rounds for sharper PSSA math thinking

This book gives you nine 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

A nine-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?

Nine PSSA tests, 360 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 7–9	Pythagorean reasoning, volume, data analysis, linear models, probability, mixed review, and stamina.
Answer Pages	Compact keys and explanations that show why each answer works.

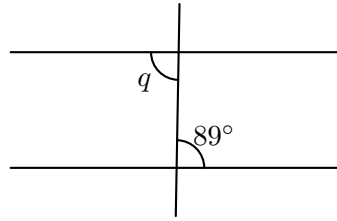
The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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1)

Two parallel lines are cut by a transversal. Angles q and 89° are alternate interior angles. What is q ?

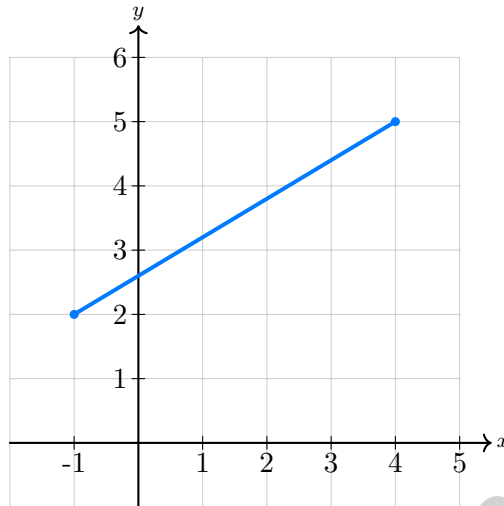
☐ A. 1° ☐ C. 91° ☐ B. 89° ☐ D. 178°

2) A student claims that reflecting a point across the x -axis and then across the y -axis gives the same result as rotating 180° about the origin. Is this claim correct?

☐ A. No, reflections never equal rotations☐ C. Only if the point is on an axis☐ B. Yes, both transformations map☐ D. Only for points in Quadrant I $(x, y) \rightarrow (-x, -y)$

3) Write 4.7×10^{-4} in decimal (standard) form.

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4)

Using the two points marked, which equation represents this line?

☐ A. $y = \frac{3}{5}x + \frac{13}{5}$

☐ C. $y = 3x + 5$

☐ B. $y = \frac{3}{5}x + 3$

☐ D. $y = \frac{2}{3}x + \frac{8}{3}$

5) Which ordered pair is NOT in the solution region of $x + y \leq 4$?

☐ A. (1, 2)

☐ C. (0, 4)

☐ B. (2, 2)

☐ D. (3, 2)

6) Which is the best estimate of $\sqrt{48}$?

☐ A. 6.5

☐ C. 6.9

☐ B. 7.0

☐ D. 8.2

7) Which expression cannot be simplified using exponent laws?

☐ A. $\frac{a^3}{b^5} \cdot a^2$

☐ C. $a^3 + a^2$

☐ B. $\frac{b^5}{b^2}$

☐ D. $(c^2)^3$



8) $(6.5 \times 10^5) - (3.2 \times 10^5) = ?$

☐ A. 3.3×10^0

☐ B. 9.7×10^5

☐ C. 3.3×10^5

☐ D. 0.33×10^5

9) Consider the equation $3x + 7 = 3x + 2$. How many solutions does this have?

☐ A. One solution

☐ B. Cannot be determined

☐ C. Infinitely many solutions

☐ D. No solution

10) Solve: $-3x + 8 < 2$

☐ A. $x > 2$

☐ B. $x < 2$

☐ C. $x > -2$

☐ D. $x < -2$

11) Line A passes through $(0,0)$ and $(3,6)$. Line B passes through $(0,1)$ and $(2,7)$. Which line increases faster?

☐ A. Line A

☐ B. Line B

☐ C. Both increase equally.

☐ D. Cannot determine.

12) A balloon loses 5 cm of altitude per second. It starts at 200 cm. Which equation gives altitude h after t seconds?

☐ A. $h = -5t + 200$

☐ B. $h = 5t + 200$

☐ C. $h = -5t - 200$

☐ D. $h = 200t - 5$



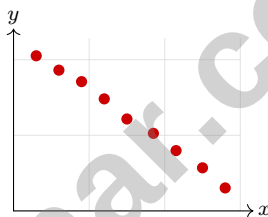
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1) A math teacher says: “A function is when you input a number and always get the same output.” Is this definition correct?

- ☐ A. Yes, this is a complete definition. that different inputs produce the same output.
☐ B. No, because constant functions like $y = 5$ are not functions.
☐ C. No, a function only requires that each input has exactly one output, not
☐ D. Yes, as long as the input is positive.

2) A pyramid has a base area of 75 ft^2 and a volume of 500 ft^3 . What is its height?

- ☐ A. 5 ft
☐ B. 10 ft
☐ C. 15 ft
☐ D. 20 ft

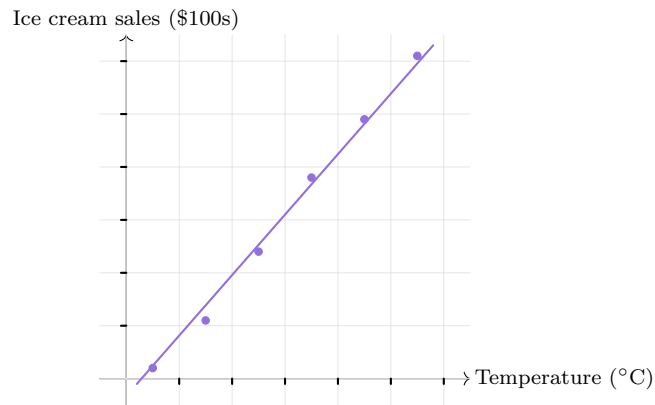


3)

A scatter plot shows the relationship between exercise frequency (days per week) and resting heart rate (bpm). The points form a clear downward trend with minimal scatter around the trend line. A student can infer that:

- ☐ A. Exercise causes higher heart rates
☐ B. More exercise is associated with lower resting heart rate
☐ C. Exercise and heart rate are unrelated
☐ D. Heart rate determines exercise frequency





4)

An ice cream shop's sales model is $S = 1.1T + 0.3$, where S is sales in \$100s and T is temperature in $^{\circ}\text{C}$. According to the model, what does the slope tell the shop owner?

- ☐ A. Sales increase by \$110 for every 1°C increase
☐ B. Sales are always at least \$30
☐ C. Temperature has no effect on sales
☐ D. Sales are maximized at 1.1°C

5) A number is chosen randomly from 1 to 10. What is the probability of choosing a prime number OR an even number?

- ☐ A. $\frac{7}{10}$
☐ B. $\frac{4}{5}$
☐ C. $\frac{5}{10}$
☐ D. $\frac{6}{10}$

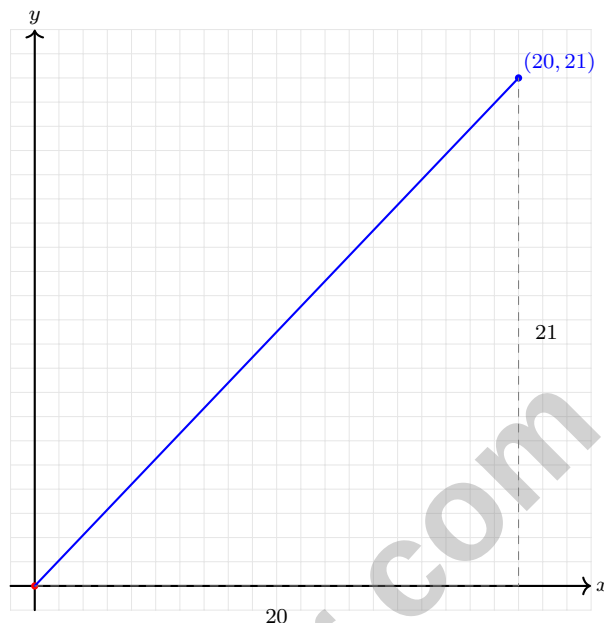
6) How many ways can a teacher select and arrange 3 students from a class of 8 to sit in the front row?

- ☐ A. $\binom{8}{3} = 56$
☐ B. $8 \times 7 \times 6 = 336$
☐ C. $8^3 = 512$
☐ D. $8! = 40,320$



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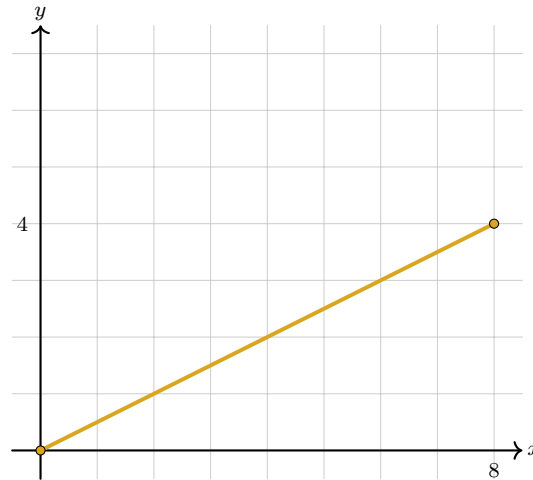
- 1) A surveyor measures a plot of land with one corner at $(0, 0)$ and another at $(20, 21)$. What is the distance between these two corners?



- ☐ A. 41
- ☐ B. 29
- ☐ C. $\sqrt{800}$
- ☐ D. 1
- 2) A camping tent is shaped like a triangular prism with a triangular base having a base of 6 feet and height 4 feet. The tent extends 8 feet in length. The two slant edges of the triangular face are each 5 feet. If the tent is completely enclosed (including the floor), what is the total surface area of fabric needed?

- ☐ A. 88 sq. ft.
- ☐ B. 112 sq. ft.
- ☐ C. 128 sq. ft.
- ☐ D. 152 sq. ft.





3)

The constant of proportionality is:

☐ A. 2

☐ C. 0.5

☐ B. 1

☐ D. 4

- 4) A spring stretches when weights are attached. The table shows the length L (in cm) for a spring with w weights attached.

Number of Weights (w)	0	2	4	6
Length (L , cm)	10	14	18	22

Which equation describes the relationship?

☐ A. $L = 2w + 10$
☐ C. $L = 4w + 10$
☐ B. $L = 10w + 2$
☐ D. $L = w + 10$


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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 B is correct.** (CC.2.3.8.A.2) Alternate interior angles are congruent when a transversal cuts parallel lines. So $q = 89^\circ$.
- 2) **Choice B is correct.** (CC.2.3.8.A.1) Reflect (x, y) across x -axis: $(x, -y)$. Then across y -axis: $(-x, -y)$. A 180° rotation also gives $(-x, -y)$.
- 3) **The correct answer is 0.00047.** (CC.2.2.8.B.1) Move the decimal 4 places to the left: $4.7 \times 10^{-4} = 0.00047$.
- 4) **Choice A is correct.** (CC.2.2.8.B.2) Slope $= \frac{5-2}{4-(-1)} = \frac{3}{5}$. Using $(-1, 2)$: $2 = \frac{3}{5}(-1) + b$ gives $b = \frac{13}{5}$.
- 5) **Choice D is correct.** (CC.2.3.8.A.1) Test $(3, 2)$: $3 + 2 = 5 \not\leq 4$ FALSE. The other points all satisfy $x + y \leq 4$.
- 6) **Choice C is correct.** (CC.2.1.8.E.1) $\sqrt{48} = 4\sqrt{3} \approx 4 \times 1.73 = 6.92 \approx 6.9$. Distractor B (7.0) confuses with nearby perfect square $\sqrt{49} = 7$; A and D are unreasonable bounds.
- 7) **Choice C is correct.** (CC.2.2.8.B.1) Addition/subtraction of powers requires like terms with same base AND exponent. $a^3 + a^2$ are not like terms.
- 8) **Choice C is correct.** (CC.2.1.8.E.4) Same exponents: $(6.5 - 3.2) \times 10^5 = 3.3 \times 10^5$.
- 9) **Choice D is correct.** (CC.2.2.8.B.3) Subtract $3x$: $7 = 2$, which is false. No value of x satisfies this equation.
- 10) **Choice A is correct.** (CC.2.2.8.B.3) Subtract 8: $-3x < -6$. Divide by -3 (FLIP): $x > 2$.
- 11) **Choice B is correct.** (CC.2.4.8.B.2) Slope of A: $(6 - 0)/(3 - 0) = 2$. Slope of B: $(7 - 1)/(2 - 0) = 3$. Since $3 > 2$, Line B increases faster.
- 12) **Choice A is correct.** (CC.2.2.8.C.2) Initial altitude is 200 cm (intercept). Altitude decreases by 5 cm per second (negative slope). Equation: $h = -5t + 200$.
- 13) **Choice A is correct.** (CC.2.2.8.C.2) The graph rises from $(0, 2)$ to $(4, 5)$, then falls from $(4, 5)$ to $(6, 1)$. Its greatest y -value is 5, and the y -intercept is 2, so choice A is the only correct set.
- 14) **Choice C is correct.** (CC.2.3.8.A.2) Translation is a rigid motion that preserves all angles. Since polygon A'B'C'D' is congruent to ABCD, angle A' = angle A = 85° .
- 15) **Choice C is correct.** (CC.2.1.8.E.4) Rectangle $= 10 \times 3 = 30 \text{ in}^2$. Trapezoid $= \frac{1}{2}(6 + 10) \times 4 = 32 \text{ in}^2$. Add the two parts: $30 + 32 = 62 \text{ in}^2$.
- 16) **The correct answer is $\frac{5}{11}$.** (CC.2.1.8.E.1) Let $x = 0.454545\dots$. Then $100x = 45.454545\dots$, so $99x = 45$ and $x = \frac{45}{99} = \frac{5}{11}$.
- 17) **Choice C is correct.** (CC.2.3.8.A.1) Interest: $I = 6000 \times 0.02 \times 2 = \240 . Total: $6000 + 240 = \$6,240$.
- 18) **Choice D is correct.** (CC.2.2.8.B.3) If the volume is 343 cubic units, then $e^3 = 343$, so $e = \sqrt[3]{343} = 7$ units.
- 19) **Choice D is correct.** (CC.2.4.8.B.1) Unit rate: $\frac{8}{10} = 0.8$ oz per minute. After 45 minutes: $0.8 \times 45 = 36$ ounces.
- 20) **Choice D is correct.** (CC.2.2.8.B.3) Subtract the second equation from the first: $(3x + 2y) - (3x - y) = 12 - 12$, so $3y = 0$ and $y = 0$. Substitute into $3x - y = 12$: $3x = 12$, so $x = 4$. Solution: $(4, 0)$.
- 21) **The correct answer is A,B.** (CC.2.3.8.A.1) Cylinder $V = 3.14 \times 9 \times 7 = 197.82 \text{ cm}^3$ (A correct); Cone $V = \frac{1}{3} \times 3.14 \times 9 \times 7 = 65.94 \text{ cm}^3$ (B correct). C is wrong (incorrect cylinder volume), D is wrong (that's the cylinder volume), E is wrong (cone is $\frac{1}{3}$ cylinder).
- 22) **Choice A is correct.** (CC.2.2.8.B.3) Find two numbers that multiply to -36 and add to 5: 9 and -4 . Verify: $9 \cdot (-4) = -36$ and $9 - 4 = 5$.
- 23) **The correct answer is $\frac{2}{9}$.** (CC.2.1.8.E.4) Set $x = 0.\overline{2}$, so $10x = 2.\overline{2}$. Subtracting: $10x - x = 2$, giving $9x = 2$ and $x = \frac{2}{9}$.
- 24) **Choice A is correct.** (CC.2.4.8.B.2) The ratio is 2 cups flour : 3 eggs. For e eggs, flour needed is $\frac{2}{3} \times e = \frac{2e}{3}$.
- 25) **Choice C is correct.** (CC.2.2.8.B.3) In $y = 2^x$, x is an exponent (not the variable being exponentiated). This is an exponential function, not linear. Linear requires $y = mx + b$ form.
- 26) **Choice D is correct.** (CC.2.2.8.B.2) Original length: $\sqrt{9^2 + 12^2} = \sqrt{81 + 144} = \sqrt{225} = 15$. Dilated: $15 \times \frac{2}{3} = 10$.
- 27) **Choice B is correct.** (CC.2.1.8.E.1) One angle at each intersection is supplementary to the 135° angle, giving 45° . At each of the 2 intersections, there are 2 such 45° angles (vertical to each other), for a total of 4.



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Hi, Smart Reviewer!

◇ The best learning often happens after the test, when you look back and notice what worked and what needs attention. This high-stamina book gave you nine substantial Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

★ **Remember this:** You can use these practice tests as a map. The questions you solved quickly show strengths; the questions you missed show where to train next. ★

Review Routine

- **Sort:** Group mistakes by skill.
- **Reread:** Check whether the question was misunderstood.
- **Resolve:** Do the problem again without looking.
- **Record:** Write the lesson in one sentence.

Grade 8 test-day tip: Review in short focused sessions. Ten careful minutes can be more useful than an hour of rushing.

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

Jay Daie

Your Review Coach

CONFIDENCE TODAY, SUCCESS TOMORROW!

GRADE

8

Help your child excel in math with **9 full-length Grade 8 practice tests** designed to reflect real test formats and cover all key math standards.

With a wide variety of questions and real-world applications, this book builds the skills and confidence students need to achieve their best!



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



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More Practice. More Confidence.
Better **Results**.