

Pennsylvania

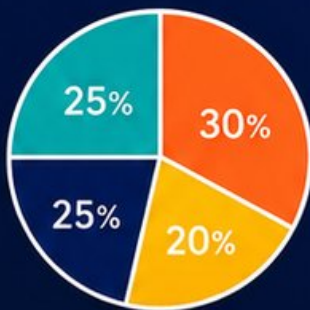
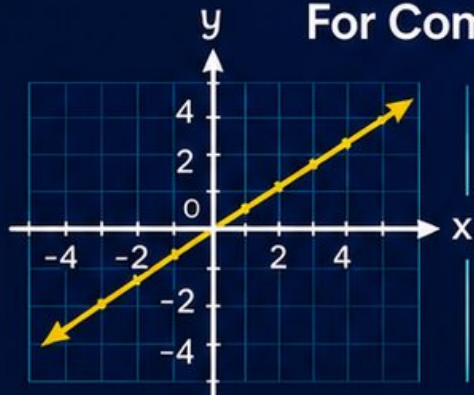
PSSA

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

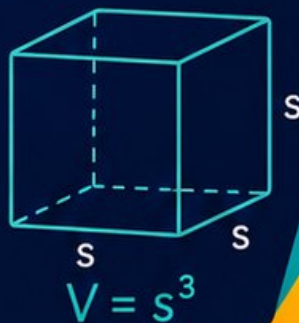


$$y = mx + b$$

$$2x - 3y = 6$$

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

$$A = bh$$



4 PRINTED TESTS



2 ONLINE TESTS



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



4 Pennsylvania PSSA Grade 8 Math Practice Tests

Four Focused PSSA Tests for Real Numbers, Functions, and Geometry



Four 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!

Four focused rounds for sharper PSSA math thinking

This book gives you four 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 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.

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?

Four PSSA 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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& answers

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1) Which value is closest to $\sqrt{35}$?

☐ A. 5

☐ C. 6

☐ B. 7

☐ D. 5.8

2) A 300 mL mixture contains 40% juice and 60% water. How much pure juice must be added to make the mixture 60% juice?

☐ A. 75 mL

☐ C. 150 mL

☐ B. 100 mL

☐ D. 200 mL

3) Two parallel lines cut by a transversal create 8 angles. If one angle is 67° , which angle measure does NOT appear among the 8 angles?

☐ A. 67°
☐ C. 47°
☐ B. 113°
☐ D. Both 67° and 113° appear

4) The Great Pyramid of Giza has an approximate square base with side 230 m and height 147 m. Estimate its volume using $V = \frac{1}{3} \times B \times h$.

☐ A. $1.5 \times 10^6 \text{ m}^3$
☐ C. $3.8 \times 10^6 \text{ m}^3$
☐ B. $2.6 \times 10^6 \text{ m}^3$
☐ D. $7.7 \times 10^6 \text{ m}^3$

5) Two-way table of 200 employees and training completion:

	Completed	Incomplete	Total
Salaried	96	24	120
Hourly	56	24	80
Total	152	48	200

What is the relative frequency of incomplete training among all employees?

☐ A. $\frac{24}{120} = 0.20$
☐ C. $\frac{24}{80} = 0.30$
☐ B. $\frac{48}{200} = 0.24$
☐ D. $\frac{48}{120} = 0.40$


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6) Which scenario would produce a scatter plot with NO correlation?

- ☐ A. Number of hours practiced versus sports performance ☐ C. Temperature outside versus heating costs
☐ B. Shoe size versus favorite color ☐ D. Years of education versus average salary

7) An equilateral triangle has side length 5 cm. A similar equilateral triangle has perimeter 60 cm. What is the scale factor?

- ☐ A. 3 ☐ C. 12
☐ B. 4 ☐ D. $\frac{1}{4}$

8) The number $\sqrt[3]{8}$ (cube root of 8) is:

- ☐ A. Irrational ☐ C. 2.67
☐ B. Between 8 and 16 ☐ D. 2, which is rational

9) Convert $0.\overline{18}$ to a fraction in simplest form.

- ☐ A. $\frac{1}{18}$ ☐ C. $\frac{18}{90}$
☐ B. $\frac{18}{100}$ ☐ D. $\frac{18}{99} = \frac{2}{11}$

n	4	9	16	25
$\sqrt{n}$	2	3	4	5

10)

Using the table, between which integers does $\sqrt{11}$ lie?

- ☐ A. 2 and 3 ☐ C. 4 and 5
☐ B. 5 and 6 ☐ D. 3 and 4



11) Which number is irrational?

☐ A. $\sqrt{9}$

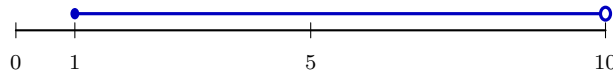
☐ B. 0.5

☐ C. $\sqrt{4}$

☐ D. $\sqrt{8}$

Coefficient range for scientific notation

Valid interval: $1 \leq a < 10$



12)

Which number is NOT in correct scientific notation form?

☐ A. 9.99×10^2

☐ B. 1.0×10^0

☐ C. 0.9×10^5

☐ D. 5.05×10^{-4}

13) A student calculates the lateral surface area of a square pyramid with base side 10 cm and altitude (height) 8 cm as: $\text{Lateral} = 4 \times \frac{1}{2}(10)(8) = 160 \text{ cm}^2$. What is the error?

☐ A. Used altitude instead of slant height

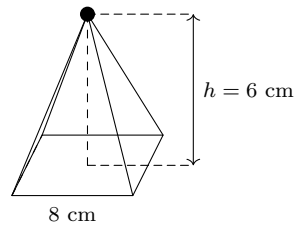
☐ B. Forgot to multiply by 4 triangles

☐ C. Used diameter instead of radius

☐ D. The calculation is correct


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- 1) The square pyramid below has a base edge of 8 cm and a height of 6 cm.



What is the volume of the pyramid?

- ☐ A. 64 cm^3 ☐ C. 256 cm^3
☐ B. 128 cm^3 ☐ D. 384 cm^3
- 2) Which two points give a slope of $-\frac{3}{2}$?
- ☐ A. (0, 3) and (2, 0) ☐ C. (2, 4) and (4, 4)
☐ B. (1, 2) and (3, 4) ☐ D. (0, 0) and (3, 2)
- 3) A regular polygon has each interior angle measuring 135° . How many sides does this polygon have? Show your work.

- 4) A piggy bank holds 25 coins consisting of nickels (5¢) and dimes (10¢). The total value is \$1.70. How many nickels are in the bank?

- ☐ A. 10 ☐ C. 12
☐ B. 16 ☐ D. 8



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- 5) A phone plan charges based on minutes used. The table shows the cost $C(m)$ for m minutes.

Minutes (m)	100	200	300	400
Cost ($C(m)$)	\$20	\$30	\$40	\$50

What is $C(200)$?

- ☐ A. \$20 ☐ C. \$30
☐ B. \$40 ☐ D. \$50
- 6) A deck of cards has 4 aces out of 52 cards. If you draw a card, replace it, and draw again, what is the probability that both draws are aces?
- ☐ A. $\frac{4}{52}$ ☐ C. $\frac{1}{152}$
☐ B. $\frac{16}{2704}$ ☐ D. $\frac{8}{52}$
- 7) A band needs to assign 3 distinct instruments to 7 musicians (each musician gets at most one). How many ways can this be done?
- ☐ A. $7 + 6 + 5 = 18$ ☐ C. $\binom{7}{3} = 35$
☐ B. $7 \times 6 \times 5 = 210$ ☐ D. $3! = 6$
- 8) Which of these functions is LINEAR?
- ☐ A. $y = 4x^2 - 1$ ☐ C. $y = \frac{2}{x+3}$
☐ B. $y = 10x - 6$ ☐ D. $y = 3^x$



1) Which equation represents a NONLINEAR function?

☐ A. $y = 2x + 3$

☐ C. $y = x^2 + 1$

☐ B. $y = -x + 5$

☐ D. $y = \frac{1}{2}x - 7$

2) Between which two consecutive integers does $\sqrt[3]{50}$ lie?



☐ A. 2 and 3

☐ C. 4 and 5

☐ B. 5 and 6

☐ D. 3 and 4

3) A video streaming service charges a flat fee plus a per-minute rate. The relationship is shown:

Minutes watched	10	20	30
Cost (\$)	2.50	4.50	6.50

What is the slope?

☐ A. \$0.20 per minute

☐ C. \$0.10 per minute

☐ B. \$2.50 per minute

☐ D. \$0.05 per minute

4) Two rectangles are considered separately. The first rectangle is x cm long and 5 cm wide. The second rectangle is y cm long and 5 cm wide. The sum of their perimeters is 56 cm, and the difference in their lengths is 2 cm. If $x > y$, what is x ?

☐ A. 8 cm

☐ C. 10 cm

☐ B. 12 cm

☐ D. 14 cm



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5) The temperature $T(h)$ in degrees Celsius at height h km above sea level is $T(h) = 25 - 6h$. What is $T(2)$?

☐ A. 37☐ C. 19☐ B. 13☐ D. 50

6) Two parallel lines cut by a transversal have alternate exterior angles measuring $(7k - 3)^\circ$ and $(5k + 17)^\circ$. Find k .

☐ A. 8☐ C. 12☐ B. 10☐ D. 14

7) A right triangle has legs of 5 and 12. What is the hypotenuse?

☐ A. 7☐ C. 17☐ B. 13☐ D. 15

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.2.2.8.B.3](#) $5^2 = 25$ and $6^2 = 36$. Since 35 is between these but closer to 36, $\sqrt{35} \approx 5.92$, closest to 5.8 among the choices.
- 2) **Choice C is correct.** [CC.2.3.8.A.1](#) Initial juice: $0.40(300) = 120$ mL. After adding x mL pure juice: total juice = $120 + x$, total volume = $300 + x$. Setting to 60%: $\frac{120+x}{300+x} = 0.60$, so $120 + x = 0.60(300 + x) = 180 + 0.60x$, giving $0.40x = 60$, thus $x = 150$ mL.
- 3) **Choice C is correct.** [CC.2.1.8.E.1](#) When parallel lines are cut by a transversal, all angles are either 67° or $180 - 67 = 113^\circ$. Since $47^\circ \neq 67^\circ$ and $47^\circ \neq 113^\circ$, it does not appear.
- 4) **Choice B is correct.** [CC.2.3.8.A.1](#) $B = 230^2 = 52900 \text{ m}^2$. $V = \frac{1}{3} \times 52900 \times 147 \approx \frac{7776300}{3} \approx 2.6 \times 10^6 \text{ m}^3$.
- 5) **Choice B is correct.** [CC.2.4.8.B.2](#) Marginal relative frequency for incomplete training: column total divided by grand total = $\frac{48}{200} = 0.24$. This is a marginal, not conditional, frequency.
- 6) **Choice B is correct.** [CC.2.2.8.C.2](#) Shoe size and favorite color have no clear logical or numerical relationship, so we would expect no meaningful correlation.
- 7) **Choice B is correct.** [CC.2.3.8.A.2](#) Perimeter of first triangle is 15 cm. Scale factor is $\frac{60}{15} = 4$. Each side of the second is $5 \times 4 = 20$ cm.
- 8) **Choice D is correct.** [CC.2.1.8.E.1](#) $\sqrt[3]{8} = 2$ because $2 \times 2 \times 2 = 8$. Since 2 is an integer, it is rational.
- 9) **Choice D is correct.** [CC.2.1.8.E.4](#) Let $x = 0.\overline{18}$. Then $100x = 18.\overline{18}$. Subtracting: $99x = 18$, so $x = \frac{18}{99} = \frac{2}{11}$.
- 10) **Choice D is correct.** [CC.2.1.8.E.4](#) From the table, $3^2 = 9$ and $4^2 = 16$. Since $9 < 11 < 16$, we have $3 < \sqrt{11} < 4$.
- 11) **Choice D is correct.** [CC.2.1.8.E.1](#) $\sqrt{9} = 3$, $\sqrt{4} = 2$, and $0.5 = \frac{1}{2}$ are all rational. $\sqrt{8} = 2\sqrt{2}$ is irrational.
- 12) **Choice C is correct.** [CC.2.2.8.B.1](#) The coefficient 0.9 is less than 1, violating the requirement that it must be in $[1, 10)$.
- 13) **Choice A is correct.** [CC.2.3.8.A.1](#) Lateral surface area requires the slant height (from apex to midpoint of base edge), not the altitude (perpendicular distance from apex to base center). The altitude is 8 cm, but the slant height is $\sqrt{8^2 + 5^2} = \sqrt{89} \approx 9.4$ cm. Using altitude is a common error.
- 14) **Choice C is correct.** [CC.2.3.8.A.1](#) Using $(x, y) \rightarrow (-y, x)$: $(2, 0) \rightarrow (0, 2)$, $(2, 1) \rightarrow (-1, 2)$, matching the End figure.
- 15) **Choice D is correct.** [CC.2.2.8.B.2](#) A horizontal line has slope 0 and is represented by $y = c$ where c is constant. Here, $c = 5$.
- 16) **Choice C is correct.** [CC.2.2.8.B.3](#) Subtract 1: $2x \geq 8$. Divide by 2: $x \geq 4$.
- 17) **Choice B is correct.** [CC.2.3.8.A.1](#) The solid line (boundary included) with shading ABOVE indicates $y \geq x + 1$. Verify: $(3, 5)$ gives $5 \geq 3 + 1 = 4$ ✓ TRUE.
- 18) **Choice B is correct.** [CC.2.3.8.A.1](#) Since $V_{\text{cone}} = \frac{1}{3}V_{\text{cyl}}$, the cone's volume is $\frac{1}{3} \times 720 = 240 \text{ in}^3$.
- 19) **The correct answer is A,C.** [CC.2.2.8.C.1](#) From the table, $g(1) = 5$ and $g(3) = 13$, so A and C are true. The other listed values are incorrect, and the function increases by 4, not 5, for each unit increase in x .
- 20) **Choice D is correct.** [CC.2.3.8.A.1](#) Interest: $I = 4000 \times 0.03 \times 3 = \360 . Final: $4000 + 360 = \$4,360$.
- 21) **Choice C is correct.** [CC.2.2.8.B.1](#) $(2^5)^2 = 2^{5 \cdot 2} = 2^{10}$. The other choices do not simplify to 2^{10} .
- 22) **Choice B is correct.** [CC.2.1.8.E.4](#) Scientific notation requires the coefficient to be in the range $[1, 10)$. In choice B, $10.2 \geq 10$, so it is not in standard form. It should be 1.02×10^5 .
- 23) **Choice A is correct.** [CC.2.4.8.B.1](#) For $y = 2x$: at $x = 1$, $y = 2(1) = 2$. Only choice A gives the correct point.
- 24) **Choice D is correct.** [CC.2.2.8.B.3](#) Subtract $3x$ and add 4: $5x = 15$. Divide by 5: $x = 3$.
- 25) **Choice C is correct.** [CC.2.2.8.B.3](#) The two lines intersect at the marked point, which is $(1, 1)$.
- 26) **Choice B is correct.** [CC.2.2.8.B.3](#) Factor out GCF of 9: $9(x^2 - 4)$. Then difference of squares: $9(x - 2)(x + 2)$.
- 27) **Choice B is correct.** [CC.2.4.8.B.2](#) The parabola opens upward and any vertical line intersects it at most once (or once in the visible region shown). This confirms it is a function.



Hi, Math Communicator!

◇ Grade 8 math is not only about getting a number. It is about explaining relationships and making your reasoning visible. ◇

★ **Remember this:** When you show steps, label diagrams, and write clear answers, you are joining the conversation that math is trying to have. You practiced across 4 full Grade 8 practice tests, and that repeated effort matters. ★

Communication Skills

- **Use Words:** Explain what the answer means.
- **Use Symbols:** Keep equations accurate.
- **Use Diagrams:** Show relationships visually.
- **Use Units:** Connect math to context.

Grade 8 test-day tip: For open-ended questions, answer in a complete thought: value, unit, and reason.

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

Jay Daie

Your Math Communication Coach

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!



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2 ONLINE TESTS



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